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The Urge to Better Conditions Is Stimulated by Disturbing Factors—What Has Become Known by the Term "Depression" May Become the Influence Whereby Conditions in Pharmacy Will Be Improved.

Vol. XXI, No. 12 DECEMBER, 1932

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

CONTENTS

Frontispiece and Sketch—George Urdang 1259
Editorial:
Final Reports of the Committee on the Costs of Medical Care 1260
Health and Maternity Insurance in Canada 1264
Scientific Section:
Studies on Commercial Psyllium Seeds—Youngken 1265
The Effect of Various Conditions of Storage on the Potency of Tincture of Digitalis—Emig 1273
Studies on the Preparation, Toxicity and Absorption of Bismuth Compounds. I. Bismuth Salts of Fatty Acids—Lauter, Jurist and Christiansen 1277
Detection of Dextrose and Sucrose in Lactose—Rosin and Hitchcock 1282
The Resistance of Mineral Oils to Decomposition by Sunlight—Green and Schoetzow 1286
Bibliography of Pharmaceutical Research—DuMez 1288
The Hydrogen-Ion Concentration of Ointment of Rose Water—Krantz, Jr., and Carr 1291
A Study of Rose Water Ointment—Lee and DeKay 1294
Unguentum Aquæ Rosæ—Lascoff 1299
Assessing Costs against the Prescription Department—Alderson 1303
Practical and Profitable Phases of the St. Louis Drug Store Survey—Slocum 1305
The New Urge of Advertising—Philip 1311
National Plant Science Seminar 1314
The Department of the American Association of Colleges of Pharmacy:
A Course in Drug Assay to Meet Commercial Requirements—Taylor 1316
Conference of Pharmaceutical Law Enforcement Officials 1319
Proceedings of the Local Branches 1350
Association Business 1358
Editorial Notes 1360
Obituary 1361
Report of the Committee on Patents and Trademarks—Stewart 1362
Index III
Advertising—Cover Pages 2, 3 and 4 and pp. I–XXII.

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THE 81st ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN MADISON, WISCONSIN, IN 1933.

The 1933 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conference of Pharmaceutical Association Secretaries, of the Pharmaceutical Law Enforcement Officials and the Plant Science Seminar will also be held in Madison.

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See page 1119, November JOURNAL.

THE SEASON'S OPPORTUNITIES AND NEW YEAR HOPES.

THIS is the time for retrospection, introspection and prospection. Conditions are very different from other years, but it has become an established custom at this season of the year to think of those in distress, whose needs are greater than ever before; to reflect and resolve.

Decided changes and different problems confront us. During many years the drug-trade activities have been more or less shaped by attrition. The sales' volume and character, the overhead, the relative profit—all have been affected, and more than ever, perhaps, the status makes an analysis possible, which may lead to a strengthening of its foundation. The U. S. census reports indicate a proportion of medicines and items which may be so included, when compared with merchandise that does not differ greatly in various classes of drug stores, but both the merchandise and the items classed under medicines differ in kind and profit-yielding. No reference is here made to the total income, which, in all probability, is less than in previous years, and does cut a figure, because of higher proportionate overhead. All of these factors have a bearing and the phases are deserving of study because they may lead to a reshaping and bettering of conditions.

The urge to know is not so powerful when there are no strong disturbing elements as at present; what has become known by the term "depression" may become the influence whereby conditions will be improved. We fail to weigh the importance of encroachments when profits are sufficient for our needs; therefore, now is the time for applying knowledge gained by experience, observation and investigation.

Pharmacists are seeking to improve the service of pharmacy by higher education, and the schools are impressing the pharmacists' responsibilities and opportunities upon their students. Success comes through diligence, energy and perseverance, and should be applied thoughtfully, patiently, earnestly and with hopeful expectancy in rendering service.

GEORGE URDANG.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XXI DECEMBER, 1932 No. 12

GEORGE URDANG.

Editor George Urdang, member of the editorial staff of the *Pharmazeutische Zeitung*,[1] was elected to honorary membership of the AMERICAN PHARMACEUTICAL ASSOCIATION at the Toronto meeting. He was born June 13, 1882, in Tilsit, East Prussia; here, in young manhood, he served as "Praktikant" in the Green Pharmacy; later, in Leipzig, he passed the State examination as apothecary with a grading of "very good." From 1910–1919 he was owner of a pharmacy in Rosenberg, West Prussia, which he disposed of March 15, 1919, to take up his present editorial work.

Editor Urdang wrote the Introductory of the biography "Erinneringen aus meinem neunzigjährigen Leben," of Dr. Ernst Wilhelm Martius, former court and university apothecary in Erlangen, Germany. (Remembrances from ninety years of the life of Dr. Ernst Wilhelm Martius, etc.) This very interesting biography (1756–1849) brings the reader in touch with contemporary pharmacists, physicians and chemists and gives an historical account of the period. There is much embodied in the Introductory which speaks for the editor's capacity of concentrating and developing interest in the story to be told.

He is author of "Das Subject und Object der Literatur" (1926), (Subject and Object of Literature); "Der Apotheker in Spiegel der Literatur" (1921), (The Apothecary Reflected in Literature); brochures "Werden und Bedeutung der Geschichte der Pharmazie" (1927), (Origin and Meaning of the History of Pharmacy); "Die Deutsche Apotheke als Keimzelle des Deutsche Pharmazeutischen Instituts," (The German Pharmacy as the Origin of the Pharmaceutical Institute (1931)), and other articles most of which have appeared in the *Pharmazeutische Zeitung*.

Editor Urdang was one of the organizers and is the second vice-president of the Society for the History of Pharmacy; the Austrian Pharmaceutical Society appointed him a corresponding member. Editor Kantrowitz says of him—"he is a jolly good fellow." He has rendered distinguished services in German pharmacy and, internationally, in the advancement of the profession and the history of pharmacy.

[1] Stated in error as *Apotheker Zeitung* in the October JOURNAL, page 1111.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase Street, BALTIMORE, MD.

FINAL REPORTS OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE.

THE report which cost more than a million dollars and five years of intensive work by a notable research staff and of close study by the directing committee of eminent men and women has been released. It embraces a majority and two minority reports. The attention, favorable and unfavorable, that the report is receiving indicates its value and the tremendous interest the public has in adequate medical care at a reasonable cost. The five recommendations are quoted on a succeeding page and are discussed in the pages following.

Granting that great progress has been made, medical care is shown as still inadequate and too costly, and the avoidable losses in time, in health and in life, as inexcusable in a civilization such as ours. "Human life in the United States is being wasted, as recklessly, as surely, in times of peace as in times of war. Thousands of people are sick and dying in this country, because the knowledge and facilities we have are inadequately supplied. We must promptly put this knowledge and these facilities to work."

The reports differ, mainly, as to procedures and the differences deal largely with the practice of medicine and dentistry and with the methods of payment for medical care. The danger is that the main purpose may be obscured by these differences of opinion. The reported conditions and the proposals to correct them, constitute a challenge to the American public. No people can be happy and contented and effective if and as long as they are unwell. The socialization of all medical care or the means of making it more effective and economical in private practice, are the alternatives.

The alternatives are as important to the groups which render medical care—physicians, dentists, pharmacists, nurses and other personnel—as to the public. The challenge to these groups is even more direct. They must either justify the present system or see it changed, probably radically, the latter with grave consequences to them. They are now open to the charges of a failure to sense the development of public opinion with respect to public health and of looking upon their licensed professions as opportunities for profit rather than for service with profit. They should bestir themselves before the public takes charge.

The report recognizes pharmacy as one of the public health professions and the important part it plays in medical care is set forth. Of the 1,084,500 people who render medical care, 132,000 are pharmacists, 142,000 physicians and 62,400 dentists. Of the $3,500,000,000 spent for all medical care of people, $715,000,000, or 18.2%, is spent for drugs and medicines, not including medical supplies. Approximately 90% of the drugs and medicines are supplied by the 60,000 pharmacies of the country, the remainder through physicians, hospitals and general merchants. The committee states "the development of the drug store into a department store for many commodities has made the services of pharmacists readily available to the people without unduly high costs for prescribed medicines." The sales of drugs and medicines compare in magnitude with the earnings of physicians, 29.8%,

or of hospitals, 23.4%, and yet have not aroused the same complaints as have the costs of physicians' services and of hospitalization.

Drugs and medicines are classified as prescriptions, 27%; home remedies, 23%, and patent medicines, 50%. The latter cost $360,000,000, "most of which is money wasted" in the language of the report. Evidently, the American people do not agree with the latter statement, and the Committee apparently failed to grasp the importance of these products. They cannot be so easily dismissed in any worth-while consideration of medical care, for they constitute an important factor.

Of all drugs and medicines consumed annually, less than one-third are used on the express order of physicians. This means that practically all of the patent medicines and most of the home remedies are used without any advice or guidance by physicians, and that the pharmacist is the only profession to whom the public can look for advice and protection in their preparation and use. Of necessity, the preparation and distribution of these products is an important function of professional pharmacy in medical care and it is unfortunate that the Committee did not give this phase of the question the consideration it deserves. The large consumption of home remedies and patent medicines apparently has a relation to the cost of medical care and places a correspondingly great responsibility on pharmacy. In fulfilling it, pharmacy should have the necessary control and public support.

It is stated that "Drugs and medicines and medical supplies are essential to adequate medical service, both therapeutic and preventive. Most of them are dangerous if unwisely employed.... Physicians and pharmacists should unite to provide the public, as economically as possible, with efficient remedies and to protect consumers from exploitation."

RECOMMENDATIONS.

The following are the five major recommendations of the committee:

1. The committee recommends that medical service, both preventive and therapeutic, should be furnished largely by organized groups of physicians, dentists, nurses, pharmacists and other associated personnel. Such groups should be organized, preferably around a hospital, for rendering complete home, office and hospital care. The form or organization should encourage the maintenance of high standards and the development or preservation of a personal relation between patient and physician.

2. The committee recommends the extension of all basic public health services—whether provided by governmental or non-governmental agencies—so that they will be available to the entire population according to its needs. This extension requires primarily increased financial support for official health departments and full-time trained health officers and members of their staffs whose tenure is dependent only upon professional and administrative competence.

3. The committee recommends that the costs of medical care be placed on a group payment basis, through the use of insurance, through the use of taxation, or through the use of both these methods. This is not meant to preclude the continuation of medical service provided on an individual fee basis for those who prefer the present method. Cash benefits, *i. e.*, compensation for wage loss due to illness, if and when provided, should be separate and distinct from medical services.

4. The committee recommends that the study, evaluation and coördination of medical service be considered important functions for every state and local community, that agencies be formed to exercise these functions and that the coördination of rural with urban services receive special attention.

5. The committee makes the following recommendations in the field of professional education: (*a*) That the training of physicians give increasing emphasis to the teaching of health and the prevention of disease; that more effective efforts be made to provide trained health officers; that the social aspects of medical practice be given greater attention; that specialties be restricted to those specially qualified, and that post-graduate educational opportunities be increased; (*b*) that dental students be given a broader educational background; (*c*) that pharmaceutical education place more stress on the pharmacist's responsibilities and opportunities for public service; (*d*) that nursing education be thoroughly remolded to provide well-educated and well-qualified registered nurses; (*e*) that less thoroughly trained but competent nursing aides and attendants be provided; (*f*) that adequate training for nurse-midwives be provided, and (*g*) that opportunities be offered for the systematic training of hospital and clinic administrators.

Pharmacy is affected by these recommendations probably less than any other group. In the first, the proposed medical center would include a "general hospital, an out-patient department and a pharmacy." This group arrangement might appear to greatly reduce the number of pharmacies except for the statement that "A few physicians and dentists and perhaps a considerable number of pharmacists would undoubtedly prefer to continue indefinitely in private practice." It is shown that most physicians and dentists now have hospital or clinic connections. The recognition of a pharmacy as an integral part of the medical center, should place pharmaceutical service in hospitals on a sound basis and bring it under safe professional control. Pharmacy is now coöperating with public health agencies; in the extension of public health service, as proposed in the second recommendation, it should have a greater opportunity for development.

The group payment basis, proposed in the third, could not seriously affect those pharmacists in the group arrangement and in hospitals, and the proposal "is not meant to preclude the continuation of medical service provided on the individual fee basis for those who prefer the present method."

The "study, evaluation and coördination of medical service," recommendation four, can only be helpful to pharmacy since (1) "the appropriate medical, dental, nursing and pharmaceutical societies should appoint committees to ascertain the facts regarding the provision of medical service, to study the various possibilities of extending the service, and to prepare local or state plans accordingly," and (2) the local or state coördinating agency "should include representatives from the public, from the medical, dental, nursing and pharmaceutical professions, from the public health services, the hospitals and the voluntary social agencies." This coördinating committee or council "should make a continuing study of the problems of organization and payment and should prepare a plan for progressive development. In addition, it should formulate such legislation as it considers necessary to further progress, to maintain professional standards, or to prevent the exploitation of either the professions or the public." This is just the type of contact and coöperation that pharmacy needs and has looked forward to. The state pharmaceutical associations should keep in touch and see that pharmacists of experience and vision are placed on these committees or councils.

Recommendation five is in line with pharmaceutical progress, particularly in view of the accompanying statement..... "The preparation, standardization and distribution of drugs, medicines and medical supplies should be limited, as far as possible, to pharmacists who are prepared by education and training to render this responsible service and to protect the public against abuse.....

There are enough if not more than enough colleges of pharmacy teaching undergraduate courses but there are very few giving graduate work. Pharmaceutical education should emphasize the pharmacist's responsibility for public health and safety. It should have a sound background, cultural and scientific. It should be more closely correlated with education in other public health professions in order to prepare pharmacists to coöperate fully with physicians, dentists, nurses and public health agencies." It is indicated here that pharmacy should have greater recognition and more responsibility in medical care and that pharmaceutical education should adequately equip pharmacists for this wider field of activity.

Under the heading "Control of Drugs and Medicines," a supplemental recommendation is made that "State and Federal Legislation should be enacted to prevent the sale of drugs and medicines with secret formulas.... and that all manufacturers of drugs and medicines should be permitted to operate only under licenses granted annually by the Federal government upon the fulfillment of prescribed conditions with respect to personnel, equipment, sanitary surroundings and standardization of finished products." This ASSOCIATION has long been on record in favor of formula disclosure and of legislation requiring that the manufacture and packaging of drugs and medicines should be under the supervision and control of registered pharmacists. It is believed that bringing the manufacture and packaging of drugs and medicines under the same legal restrictions as now control the retail preparation and distribution of them will be more effective than Federal licensing, especially as many of these operations are carried on intra-state. Provision should be made for more careful supervision of the manufacture and distribution of those drugs and medicines furnished through physicians and hospitals in order that the entire field may be covered.

With respect to this supplementary recommendation, eight of the committee members, including representatives of each group, signed the following additional statement "We support the recommendation of the Committee and would add to it the recommendation that only qualified pharmacists should be allowed to sell drugs and medicines." *This is a most significant statement* and coupled with the statements previously quoted, constitutes an approval of practically all that pharmacy has claimed as being essential for the protection of the public with respect to drugs and medicines. They constitute a definite expression of the position which pharmacy should take in medical care, made by a representative group of laymen and professionals after a very thorough and comprehensive study of present conditions.

Pharmacy and pharmacists should awake to the greater opportunity this study and report opens to them. They should insist that the preparation, distribution and sale of all drugs and medicines be limited to registered pharmacists. They should, in turn, make this service their major function and accept the full responsibility of seeing that drugs and medicines are honestly made, truthfully labeled, generally available, safely distributed and reasonably priced.

Pharmacy and pharmacists have everything to gain by such a policy. Business and economics have their place in such a program. In fact, they are indispensable to its success. Professional service and professional responsibility, however, must control, or we may surely expect the socialization of pharmacy as a necessary division of medical care.

Drugs and medicines and medical supplies are shown to be indispensable to adequate medical care. Pharmacy is, therefore, a necessary public health service. The people will have this service as a part of their medical care. If it is not satisfactorily furnished by the pharmacists, the people will get it through other agencies or groups.

Some drugs and medicines and medical supplies now used may be found to be unnecessary. If so, others will be required in their place—if history is a guide. Their preparation, improvement and distribution constitute a worth-while and profitable activity, amounting in cost to close to a billion dollars and affecting, to a considerable extent, the physical well-being and safety of the people.

The report observes "This survey leads the Committee to one general conclusion. The one million persons who furnish medical care and the one hundred and twenty-three millions who may receive it should make concerted and carefully planned efforts to meet needs and to devise remedies for present deficiencies and wastes.

"The present situation is a result of growth in the science of medicine, in the arts and organization of practice, and in the changing structure and attitudes of our urbanized and mobile civilization. Medical care is essential. While it requires substantial expenditures, its absence or inadequacy involves still greater costs. The organized professions of medicine, dentistry, pharmacy and nursing; the organization of employees and of employers, the civic, social welfare and governmental agencies all have a stake in this great problem and ample reasons for bending energies toward its solution. None of the major problems of medical care can be solved by any one group alone. Those who furnish the services on the one side and those who receive and pay for them on the other, must coöperate if either is to meet the needs which they perceive or to attain the benefits which they desire."—E. F. KELLY.

HEALTH AND MATERNITY INSURANCE IN CANADA.

THE Royal Commission, appointed by the Government of British Columbia, reported, in 1930, that there was a general demand for the introduction of a health insurance scheme. Recently, the Commission issued its final report in which it was stated "that the public is strongly in favor of a system of compulsory health and maternity insurance." The report detailed a plan and recommended that the benefits of the insurance should provide for medical and surgical treatment, the supply of necessary medicines and appliances, and hospital benefits.

The Commission's report does not include a plan for organization, but choice of doctor is proposed. Based on British experience, the Commission does not favor mutual benefit societies in their plan, but recommends an administrative provincial board, composed of representatives of insured persons, of employers, and of the medical profession and of various governmental divisions.

The seeming growth of the idea of health insurance makes it necessary for pharmacists to keep in touch with the development, for, of necessity, such system affects pharmacy; therefore, pharmacists should watch the progress of thought and legislation and be represented in the discussions on the subject. This comment does not speak for a system of health insurance, but is expressive of the interests of pharmacy.

SCIENTIFIC SECTION

BOARD OF REVIEW ON PAPERS.—*Chairman*, L. W. Rowe; John C. Krantz, Jr.; F. J. Bacon.

STUDIES ON COMMERCIAL PSYLLIUM SEEDS.*

BY HEBER W. YOUNGKEN.

INTRODUCTION.

Psyllium Seed, a drug unknown to the majority of the people of this country 10 years ago, has suddenly loomed into popularity as a laxative and demulcent and its use appears to be gaining in momentum. The drug has been in use in Asia and Europe for more than a century, but until the past 4 or 5 years, only to a very limited extent in America. Its mucilage has been employed in Europe as a cosmetic and in the stiffening of fabrics.

The present commercial article has been varied and represents seed of various species of the genus *Plantago* which are related to our Common Plantain, *Plantago major*, a pestiferous weed in lawns and fields, the leaves of which have been used by the older people as a stimulating application to sores, frequently in the form of a poultice.

The chief commercial varieties in the American trade to-day are the French or black Psyllium Seed, the blonde or white Psyllium Seed also known as Indian Plantago Seed and the German Psyllium Seed. It is conservatively estimated that about 3000 tons of seed of these varieties were imported into this country during the past year, the bulk from France and India. The ratio of imports of the Black and Blonde varieties in 1931 were 5 to 1, in 1930 they were 2:1 (1).

Fig. 1.—*Plantago Psyllium* L., the source of French or Black Psyllium seed. (*Photograph, the courtesy of Gray Herbarium.*)

In addition to the three chief commercial varieties, Spanish and Italian Psyllium Seeds have occurred in smaller amounts and a number of seeds purported to be Psyllium have been offered to the trade. The various commercial kinds can be purchased as "imported," "cleaned," "triple cleaned" and as "cleaned and sterilized."

On account of standards being lacking for Psyllium in the United States, considerable seed of inferior grade has been sporadically offered in trade, and even substitutes having no relationship to Psyllium have been marketed. One of the

* Presented to the Scientific Section, Toronto meeting, 1932.

more recent of the latter has been the small fruit of a member of the *Labiatæ* or Mint Family, namely, *Lallemantia royeleana* Benth. Roasted German Psyllium has been offered under the label of French Psyllium Seed. The seed of a Plantain grown in New York State have been offered as Black Psyllium.

This investigation was made for the purpose of acquiring scientific data which would aid in the standardization of Psyllium Seed. It began over 2 years ago, since which time the writer has examined a large number of samples obtained from various trade sources. Seed of different types were planted in seed boxes and in the open and a number of seedlings brought to maturity and the plants and seed compared with authentic herbarium specimens in the Gray Herbarium of Harvard University, in order to establish the correct botanical identity of the commercial material.

Macroscopic and microscopic studies were also made on the French, Blonde and German varieties as well as determinations of the total ash, acid-insoluble ash and mucilage content of each of these, which will now be separately discussed.

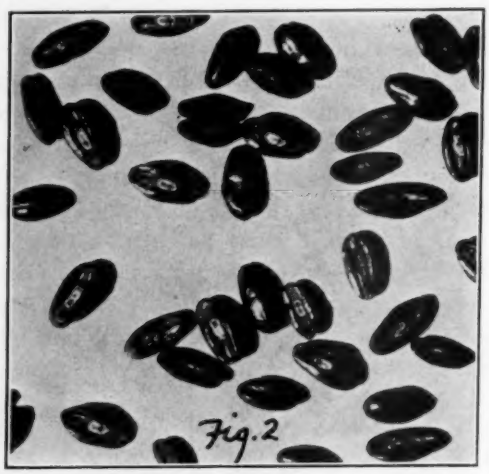

Fig. 2.—French Psyllium Seed × 4 yielded by *Plantago Psyllium* L.

FRENCH PSYLLIUM SEED.

This represents the dried seed of *Plantago Psyllium* L. (Fam. *Plantaginaceæ*). This seed is also called Flea Seed, Black Psyllium Seed and Brown Psyllium Seed.

Most of the commercial samples examined which were labeled "French Psyllium Seed" consisted in the main of the seed of *Plantago Psyllium* L., an annual caulescent, glandular, pubescent herb native to Mediterranean countries. It has been cultivated extensively in France, which country to-day yields the bulk of our imports of this variety.

The seeds were hemianatropous, elliptical to ovoid, dark brown to reddish brown, shining, from 2 to 2.5 mm. or occasionally 3 mm. in length and from 1 to 1.2 mm. in breadth, concavo-convex with a light brown longitudinal area extending lengthwise along the center of the upper surface and representing the embryo as viewed through the somewhat transparent coat. The lower surface showed a deep concavity in the center of the base of which was an oval, white scar representing the hilum. Some seeds showed a whitish raphe extending from the center of the base of the concavity to one end.

When this seed was soaked in water its seed coat swelled and the seeds became enveloped with a transparent mucilage which was odorless and tasteless.

One gram of seed, agitated occasionally in a cylinder with 8 cc. of water, formed a thick tasteless jelly with the seeds in suspension.

A mucilage determination was made on each of 2 samples of cleaned French

Psyllium Seed. Sample 1 yielded 12.470% and Sample 2 yielded 11.098% of mucilage.

Total ash and acid-insoluble ash determinations made on 5 of the samples of French Psyllium gave the following results: All were ashed whole.

Sample No.	Per Cent Total Ash.	Per Cent Acid-Insoluble Ash.
1 (cleaned)	2.61	0.715
2 (cleaned)	2.54	0.711
3 (clean-looking)	3.42	0.080
4 (clean-looking)	3.28	0.180
5 (clean-looking)	3.75	0.250

Histology.—Transverse sections of *P. Psyllium* seed cut through the center of the seed possess a reniform outline and present for examination a spermoderm, endosperm and embryo. The spermoderm shows (1) an outer epidermis of mucilaginous epidermal cells with more or less obliterated walls, forming a clear mucilage when coming into contact with water, (2) a hyaline middle layer seen only in parts of groove region and (3) a pigment layer with brown amorphous content. Directly beneath the spermoderm lies the broad endosperm composed of irregular shaped, thick-walled cells with walls of reserve cellulose, and intercellular-air-spaces. The outer layer of this region consists of palisade cells from about 18μ to 46μ in height. The contents of these cells consist of aleurone grains and fixed oil. The straight embryo lies in the center of the endosperm and consists of 2 plano-convex cotyledons and a cylindrical hypocotyl. The cells of the embryo contain aleurone grains and fixed oil. The aleurone grains measured from 2 to 8μ in diameter and were of rounded, oval, pyriform and irregular shapes. Most of them were under 4μ. Three plerome bundles extend through each of the cotyledons.

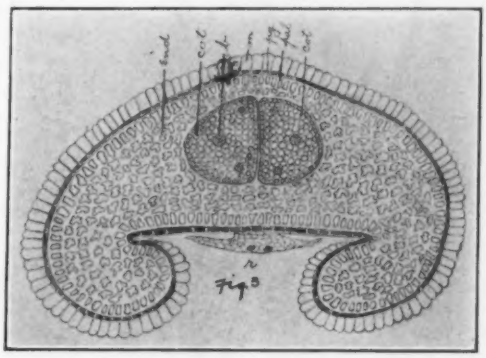

Fig. 3.—Transverse section of French Psyllium Seed (*Plantago Psyllium* L.) as observed in a glycerin mount (× 38); *m*, mucilaginous epidermis and *pg*, pigment layer of seed coat; *end*, endosperm; *pal*, palisade layer of endosperm; *cot*, cotyledon; *b*, vascular bundle; *r*, raphe.

Impurities.—These consisted of foreign seeds, including those of the Cruciferæ, membranous fragments of pyxes and tiny snail shells with sharp edges.

BLONDE PSYLLIUM SEED.

This represents the dried seed of *Plantago ovata* Forskall (Fam. *Plantaginaceæ*), an annual acaulescent herb native to Asia and Mediterranean countries. It has also been termed in commerce White Psyllium Seed, Indian Plantago Seed and Ispaghula Seed. The plant has been extensively cultivated in India.

Most of the commercial samples labeled as above, which were examined, consisted in the main of this seed.

The seeds were broadly elliptical or ovate, cymbiform, pale grayish brown with a pinkish tinge and with a dull surface, light brown where abraded, averagely from 2 to 2.5 mm. occa-

sionally up to 3 mm. in length and from 1 to 1.5 mm. in width. On the convex surface there is a small, elongated, shining brown spot representing a portion of the embryo as seen through the seed coat. On the concave surface is a deep excavation at the base of which is the hilum, covered with a thin whitish membrane which extends to one of the edges. This represents the raphe, and the seed is thus hemianatropous.

Upon soaking this seed in water the seed coat swelled and the seeds became enveloped with a transparent, colorless mucilage. Under the microscope the epidermal cells elongated and their outer and radial walls became transformed to mucilage.

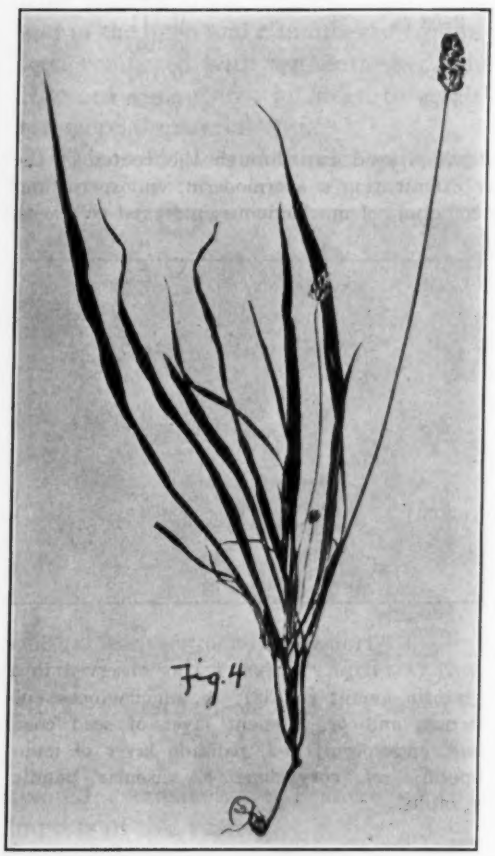

Fig. 4.—*Plantago ovata* Forskall, the source of typical Blonde Psyllium seed. Grown by author from commercial seed. × 1/3.

One gram of this seed, occasionally agitated in a cylinder with 15 cc. of water, formed a thick, transparent, colorless mucilage which was devoid of taste or odor. Another sample yielded a thick mucilage when 1 Gm. of seed to 20 cc. of water were used.

Clevenger reports this seed for some time on the market as yielded by *Plantago Loeflingii* L. (2). The writer has grown mature plants from the commercial seed resembling that which he describes and compared them with authentic herbarium material in the Gray Herbarium of Harvard University and found these to represent *Plantago ovata* Forsk.

The main distinctions between *Plantago ovata* and *P. Loeflingii* plants can be determined through the dissection and examination of their flower parts. The petal lobes of *P. ovata* are oval with a mucronate summit whereas those of *P. Loeflingii* are Lanceolate with an acute summit. The bracts of *P. ovata* are rounded ovate, glabrous, with a herbaceous midrib extending to the obtuse tip and scarious margined, whereas those of *P. Loeflingii* are transversely ovate, broader than long, glabrous or ciliate at margin with a herbaceous midrib excurrent in a broad obtuse point. The sepals of *P. ovata* are marked with a distinct midrib extending from base to summit, whereas those of *P. Loeflingii* show only a rudimentary midrib in the basal portion. The foliage leaves of *P. Loeflingii* tend to develop longer marginal teeth than those of *P. ovata*.

Mucilage determinations were made on each of 2 samples of cleaned *Blonde Psyllium* Seed. Sample 1 yielded 32.08% and Sample 2 yielded 29.65% of mucilage.

Total ash and acid-insoluble ash determinations made on the following samples of Blonde Psyllium Seed gave the following results. All were ashed whole.

Sample No.	Per Cent Total Ash.	Per Cent Acid-Insoluble Ash.
1 (cleaned)	2.30	0.74
2 (cleaned)	2.31	0.72
3 (clean-looking)	2.70	0.36
4 (clean-looking)	2.63	0.38

Histology.—Cross sections of this seed exhibited a reniform outline and showed a spermoderm composed of a colorless outer epidermis of radially elongated mucilage cells which greatly swell in water, becoming several times their normal size and their walls become more or less obliterated. In surface section, these cells are irregularly polygonal. Beneath this in sections cut through the center of the seed occurs a brown pigment layer. A somewhat obliterated, middle hyaline layer occurs in the ends and edges of the groove. Directly beneath the spermoderm is a broad endosperm composed of a layer of palisade cells and many irregular shaped layers of reserve parenchyma cells with thick walls of reserve cellulose and large air-spaces. The cells contained aleurone grains mostly under 4μ in diameter and fixed oil droplets. The straight embryo, consisting of 2 plano-convex cotyledons and a hypocotyl, extends through the center of the endosperm region. Its more or less rounded parenchyma cells have contents similar to the endosperm. A plerome bundle extends through the center of the hypocotyl and branches through each of the cotyledons.

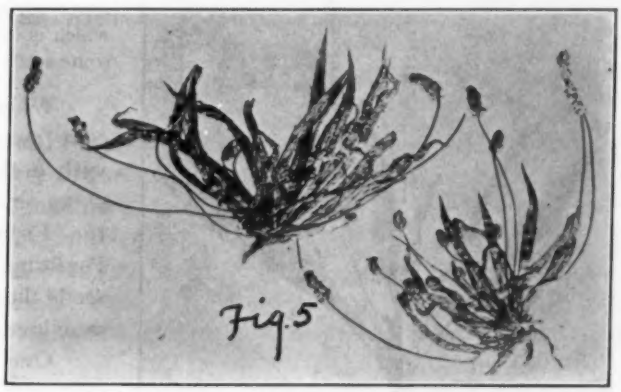

Fig. 5.—*Plantago Loeflingii* L. collected in Armenia. (*Photograph, the courtesy of Gray Herbarium*) × 2/3.

Impurities.—Foreign seeds, fragments of membranous pyxes and tiny snail shells.

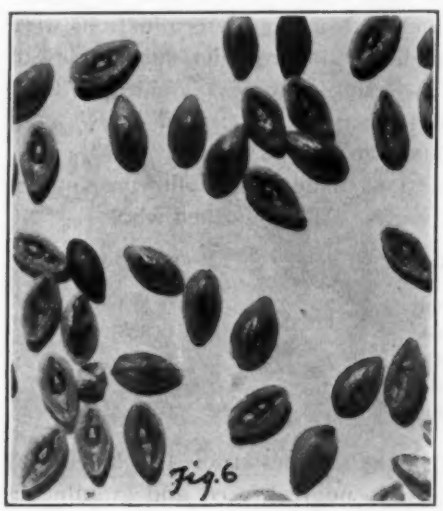

Fig. 6.—Blonde Psyllium or Indian Plantago Seed yielded by *Plantago ovata* Forskall. × 4.

GERMAN PSYLLIUM SEED.

This represents the dried ripe seed of *Plantago lanceolata* L. (Fam. *Plantaginaceæ*), a perennial herb native to Europe and widely naturalized in grassy places and fields in this country. It occurs commonly as an adulterant of clover seed and is a constituent of some bird foods. This seed is also known as English Plantain Seed and the plant commonly as Ribgrass, English-Buck or Buckthorn Plantain and less commonly as Black

Jacks, Jack Straws, Dog's Ribs, Rattail, Chimney-sweeps and Snake, Lance-leaved or Ripple Plantain.

The seeds examined were hemianatropous, oval to elliptical to oblong ovate, glossy, light brown to dark brown, usually of both colors in commercial samples and no doubt representing different stages of maturity of the seed, from 2 to 2.5 mm. in length and from 1 to 1.2 mm. in breadth, concavo-convex, with a broad, longitudinal, yellowish brown area extending the length of the center of the upper surface and a deep excavation on the lower surface in the center of the base of which is an oval dark hilum from which in some seeds a raphe extends to one end.

Fig. 7.—*Plantago lanceolata* L., the source of German Psyllium Seed. × 1/3.

When soaked in water the seed coat swelled and became enveloped with a thin mucilage, not as stringy or as thick as in the case of that of the French or Blonde varieties of Psyllium. As with other *Plantago* seeds the mucilage formed is membrane mucilage from the epidermal cell walls.

One gram of seed, occasionally agitated in a cylinder with 4 cc. of water, formed a moderately thick tasteless mucilage. Clevenger (2) gives the swelling factor of *P. lanceolata* seeds as approximately 4. On two samples tested by his method I obtained a swelling factor of 3.5 and 4, respectively. Mucilage determinations were made upon 2 commercial samples of this seed. Sample 1 yielded 11.92% and Sample 2 yielded 10.87% of mucilage.

Total ash and acid-insoluble ash determinations made on the following samples of German Psyllium Seed gave the following results: All were ashed whole.

Sample No.	Per Cent Total Ash.	Per Cent Acid-Insoluble Ash.
1 (cleaned)	2.46	0.374
2 (cleaned)	2.64	0.333
3 (cleaned)	2.68	0.33
4 (cleaned)	2.64	0.33
5 (as imported)	3.65	0.54

Impurities.—The foreign organic matter in the samples studied included portions of spikes and pyxes of the same species, foenugreek seed and gramineous seed.

Histology.—Transverse sections of the seed of *P. lanceolata* showed a spermoderm consisting of an outer epidermis of tangentially elongated epidermal cells with mucilaginous walls

and contents and a pigment layer of thin-walled cells with brown, amorphous contents. On the ends and in the edges of the excavation a middle layer of thin-walled cells is also evident as shown by Kraus (3) and Winton (4). Beneath the spermoderm a broad endosperm is to be found consisting of an outer palisade layer and of inner irregular shaped cells all with thick walls of reserve cellulose and with aleurone and fixed oil contents. Protoplasmic connections were evident between these cells. The embryo, consisting of 2 cotyledons of plano-convex appearance in cross sections and a terate hypocotyl, extends straight through the center of the endosperm. Its cells are thin-walled and contain aleurone and fixed oil.

Fig. 8.—German Psyllium Seed (*Plantago lanceolata*). × 2.5.

SPANISH PSYLLIUM SEED.

Seven samples of commercial Spanish Psyllium were examined. Three of these showed the seed to be of the French type but of averagely lighter color and smaller. Three others were identical in every respect with French Psyllium Seed (*P. Psyllium*), previously described in this article. One of them proved to be identical with *Plantago lanceolata* seed.

The light colored Spanish Psyllium Seed was from 1.4 to 2.7 mm. in length, and 0.8 to 1 mm. in breadth; light brown in color becoming dark brown along the edges of the concave surface in some seeds, and in other seeds also showing a transitory darkening on parts of the convex surface. The seeds gave a silky sensation to the touch.

Although mature plants from seed samples of the lighter Spanish type of Psyllium have not as yet been reared by the writer, it seems likely that this light colored variety of Spanish Psyllium Seed may represent either immature seed of *Plantago Psyllium* L. or possibly the seed of *Plantago arenaria* Waldst. et Kit., a closely related species.

Fig. 9.—*Plantago Rugelii* Seed from a sample grown in New York State and marketed as Black Psyllium. × 3.

One gram of light colored Spanish Psyllium, occasionally agitated with 8 to 10 cc. of water, formed a thick odorless and tasteless jelly with imbedded seed. This jelly appeared thicker than that yielded by the French variety.

IDENTITY OF NEW YORK GROWN BLACK PSYLLIUM.

New York Black Psyllium Seed was found upon comparative study to be identical with *Plantago Rugelii* Dene.

QUALITATIVE MUCILAGE TESTS.

Tests were made on the filtered mucilage of cleaned seed of the first three varieties with litmus paper, 95% alcohol, lead acetate T.S., saturated solution of borax, iodine T.S., fuchsin-sulphurous acid, Millon's reagent and concentrated sulphuric acid with the following results:

Seed Variety.	Litmus.	Lead Acetate T.S.	95% Alcohol.	Sat. Sol. Borax.	Iodine T.S.	Fuchsin-Sulphurous Acid T.S.
French	Blue	No immediate change; slight ppt. later	Stringy precipitate	No change	Negative	Negative
Blonde	Blue	Slightly bluish cloudy ppt.	Precipitate	No change	Negative	Negative
German	Pink	Very cloudy, and if reagent is floating on mucilage, a line of ppt. is evident	Slight precipitate	No change	Negative	Negative (Upon heating a clear pink solution in all three)

Millon's reagent produced a white floculent precipitate in all three. Cold concentrated sulphuric acid formed a clear solution with all three.

The mucilage of The French and Blonde varieties is colorless, while that of the German Psyllium is light brown.

SWELLING FACTORS OF SEEDS.

The following test was made upon lots of the different varieties of commercial seeds in order to obtain their swelling factors:

One gram of each sample was placed in a 50-cc. graduated cylinder and tap water added to the 20-cc. mark (to the 50-cc. mark with *Lallemantia royeleana*). The cylinder was shaken at intervals during a period of 24 hours, at the expiration of which time the seeds were allowed to settle, and the total volume occupied by the swollen seeds noted. The final reading in cubic centimeters was taken as the swelling factor. The results of this test for the several lots was as follows:

French Psyllium	8
Blonde Psyllium	11 to 13
German Psyllium	4
Spanish Psyllium	12 to 14
Lallemantia royeleana	40

This modification of the method proposed by J. F. Clevenger (2), appears to have the advantage of permitting more mucilage formation by the seeds. It is suggested as a better index of their mucilage forming capacity.

CONCLUSIONS.

(1) Typical French and the Dark Spanish varieties of Psyllium Seeds of the American market are yielded by *Plantago Psyllium* L.

(2) A sample of Black Psyllium collected and marketed as from plants grown in New York State was found to be yielded by *Plantago Rugelii* Dene.

(3) Typical Blonde Psyllium is the product of *Plantago ovata* Forsk., rather than of *P. Loeflingii* as previously reported.

(4) Of all the Commercial Psyllium seeds examined, those yielded by *Plantago ovata* rank highest in mucilage content and therefore in demulcent qualities with the seeds of *Plantago Psyllium* ranking second. *Lallemantia royeleana* fruits yield more mucilage than Psyllium seeds but must not be regarded as even a variety of Psyllium.

(5) The mucilage yielded by the seeds of *Plantago Psyllium* and *Plantago ovata* is of superior quality to that yielded by the seeds of *Plantago lanceolata*.

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MASSACHUSETTS COLLEGE OF PHARMACY, BOSTON.

THE EFFECT OF VARIOUS CONDITIONS OF STORAGE ON THE POTENCY OF TINCTURE OF DIGITALIS.*

BY HERBERT M. EMIG.[1]

I. DEFINITION.

One of the most important preparations appearing in the United States Pharmacopœia is tincture of digitalis. When this drug is prescribed a definite action upon the heart is expected. Often this characteristic digitalis action—slowing of the rate, decrease in conductivity, increase in irritability, lengthening in diastole and more effective systole, is not obtained, or is only weakly exhibited by old preparations. Although such tinctures at the time of manufacture assay full strength, at the end of the period of storage biological tests show that they have undergone a loss of all or part of their potency.

This work represents a study of the influence of several factors upon the keeping qualities of the tincture during storage. The factors concerned were temperature, hydrogen-ion concentration of the extracting menstruums, exclusion of air by sealing and displacement of air in container with carbon dioxide.

II. INTRODUCTION.

Numerous investigations considering the effect of changes in the hydrogen-ion concentration upon the potency of the tincture as well as the infusion of digitalis have been performed. Pittenger (1), as well as Wokes (2), found that a normal tincture lost 30% of its potency during a sixteen months' period. Wokes also observed that a variation in p_H value of the tincture over a range of 5.47 to 5.93 decreased its potency, and when a tincture was made distinctly alkaline (p_H 8) an increase in the rate of deterioration occurred. Contrary to the findings of Wokes,

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* Scientific Section, A. PH. A., Toronto meeting, 1932. No discussion.

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Joachimoglu and Bose (3) stated that tincture of digitalis can be rendered more stable by the addition of tartaric acid until a p_H of about 5.2 is obtained. Of interest is the work of Krantz, Jr. (4), who contributed information concerning the neutralizing properties of tincture of digitalis.

Hintzelmann and Joachimoglu (5) found that an alkaline infusion of digitalis (p_H 8) deteriorated much more rapidly than a similar infusion at p_H 6.7. By the addition of 0.1 per cent of hydrochloric acid to an infusion of digitalis, Takahashi (6) observed an increase in the stability of the preparation.

III. METHODS AND PROCEDURES.

The various tinctures of digitalis were manufactured according to the United States Pharmacopœia X specifications with one exception, the changing of the hydrogen-ion concentration of the menstruum. In making the normal tincture the official method was followed throughout. Selected leaves donated by the Upsher Smith Company and Parke, Davis and Company were used.

The menstruum for each tincture was made separately. Part of the distilled water was replaced by the necessary quantity of an aqueous solution of the chemical required to obtain the desired p_H value. This procedure guarded against any change in the alcoholic strength of the finished product which was 70%. The colorimetric method was used to determine the hydrogen-ion concentration. The results were checked by the use of a Leeds and Northrup quinhydrone p_H apparatus.

The following table shows the chemicals used, as well as the respective p_H values of the menstruum employed in the making of the tincture.

Chemical.	p_H of Menstruum.									
Normal					5.8					
HCl	4.1	4.5	5.2	5.6						
NaH_2PO_4		5.2	5.4	5.7						
$HC_2H_3O_2$		5.1	5.4	5.6						
KOH						6.4	7.0	7.6	8.1	
NaOH						6.5	7.1	7.7	8.2	8.5
Na_2CO_3						6.2	6.8	7.5		

The tinctures were made by the official method. After obtaining the finished preparations each one was assayed by the one-hour frog method.

Four samples of each individual tincture were stored in two-ounce amber, glass-stoppered bottles. The tinctures were kept under the following conditions for one year.

Group I. Well filled, not sealed, room temperature.

Group II. Well filled, sealed with paraffin, room temperature.

Group III. Carbon dioxide replacing air of partially filled bottles, sealed with paraffin, room temperature.

Group IV. Well filled, not sealed, refrigerator.

Amber bottles were used in order to avoid any action that light may have upon the preparation. Group I represents the condition in which most tinctures of digitalis appear on the market. In Group II the paraffin excludes the air other than that which was present in the bottle. Through the use of carbon dioxide in Group III we replace the air with a non-oxidizing gas. Low temperature was considered in Group IV.

After the expiration of a year the tinctures were again assayed by the official method and the results compared with those obtained from the freshly made products.

IV. EXPERIMENTS AND TABLES.

CHART A.

		Room Temperature.						Refrigerator.		
Chemical.	p_H.	Original.	Sealed.	% Loss.	Unsealed.	% Loss.	CO_2.	% Loss.	Unsealed.	% Loss.
Normal	5.8	0.006	0.011	83.3	0.011	83.3	0.010	66.7	0.011	83.3
HCl	4.1	0.008	0.012	50.0	0.012	50.0	0.011	37.5	0.011	37.5
HCl	4.5	0.009	0.010	11.2	0.011	22.3	0.010	11.2	0.012	33.4
HCl	5.2	0.009	0.010	11.2	0.011	22.3	0.011	22.3	0.011	22.3
HCl	5.6	0.008	0.010	25.0	0.011	37.5	0.011	37.5	0.011	37.5
NaH_2PO_4	5.2	0.008	0.011	37.5	0.011	37.5	0.011	37.5	0.011	37.5
NaH_2PO_4	5.4	0.008	0.011	37.5	0.011	37.5	0.011	37.5	0.010	25.0
NaH_2PO_4	5.7	0.008	0.011	37.5	0.011	37.5	0.011	37.5	0.011	37.5
$HC_2H_3O_2$	5.1	0.009	0.012	33.3	0.012	33.3	0.011	22.3	0.011	22.3
$HC_2H_3O_2$	5.4	0.008	0.012	50.0	0.012	50.0	0.010	25.0	0.011	37.5
$HC_2H_3O_2$	5.6	0.008	0.011	37.5	0.011	37.5	0.011	37.5	0.011	37.5

CHART B.

		Room Temperature.						Refrigerator.		
Chemical.	p_H.	Original.	Sealed.	% Loss.	Unsealed.	% Loss.	CO_2.	% Loss.	Unsealed.	% Loss.
KOH	6.4	0.009	0.013	44.4	0.013	44.4	0.013	44.4	0.012	33.3
KOH	7.0	0.010	0.013	30.0	0.013	30.0	0.013	30.0	0.012	20.0
KOH	7.6	0.010	0.013	30.0	0.013	30.0	0.013	30.0	0.012	20.0
KOH	8.1	0.011	0.014	27.3	0.014	27.3	0.013	18.2	0.012	9.1
NaOH	6.5	0.009	0.013	44.4	0.013	44.4	0.013	44.4	0.013	44.4
NaOH	7.1	0.009	0.013	44.4	0.013	44.4	0.013	44.4	0.013	44.4
NaOH	7.7	0.010	0.014	40.0	0.014	40.0	0.014	40.0	0.013	30.0
NaOH	8.2	0.010	0.014	40.0	0.014	40.0	0.014	40.0	0.014	40.0
NaOH	8.5	0.010	0.014	40.0	0.015	50.0	0.014	40.0	0.014	40.0
Na_2CO_3	6.2	0.009	0.014	55.6	0.014	55.6	0.014	55.6	0.014	55.6
Na_2CO_3	6.8	0.010	0.015	50.0	0.015	50.0	0.015	50.0	0.014	40.0
Na_2CO_3	7.5	0.010	0.014	40.0	0.015	50.0	0.014	40.0	0.014	40.0

Charts A and B present results of 708 experiments in which the various tinctures were assayed. The first column of figures from the left designates the type of chemical used to change the hydrogen-ion concentration of the menstruum, while the second gives the result in p_H values. In the third is listed the fraction of a cc. of the tincture necessary to stop the frog's heart in systole at the end of one hour when assayed immediately after manufacture. The remaining columns state the conditions of storage, the assay dosage, as well as the percentage loss in potency, after an elapse of one year. It is to be noted that the acid p_H value following the use of alkalies is due to the fact that the tincture is normally acid.

V. RESULTS OBTAINED.

From the results as tabulated in Charts A and B it is evident that changing the p_H value of the extracting menstruum, within the limits of these experiments, produces tinctures of substandard strengths. This is independent of the type of acid or alkali used.

By the addition of HCl various p_H ranges from 5.6 to 4.1 were obtained. The tincture showed a decrease in potency from 30% to 50% in comparison to a normal tincture. The tincture, after one year of storage displayed a further decrease of from 12% to 50%. Nevertheless those preparations having the greatest

decrease after manufacture now show the smallest drop, while those with the lower percentage decrease originally, now show a greater substandard condition. Due to this counter-balancing the product at the end of the time period showed about the same potency, a decrease of 65% to 100% from the normal tincture, regardless of the condition of storage.

The series containing sodium acid phosphate possessing p_H values of 5.7 to 5.2 all showed a comparative decrease of 33% and an additional loss of 37.5% during storage. This in terms of the normal tincture would mean a lowering of the potency 83.3%.

In those preparations containing the largest quantity of acetic acid (p_H 5.1) the decrease was found to be 50% while those with p_H values of 5.4 and 5.6 lost 33.3%. After the second assay the tinctures kept at a low temperature and those possessing CO_2 were slightly more stable, the potency decreasing from the first assay 37.5% and from the normal tincture 83.3%. The two tinctures having the p_H values of 5.1 and 5.4 and kept in sealed and unsealed bottles at room temperature showed at the end of one year a decrease of 33.3% and 50%, respectively, or a 100% when compared with the normal.

On the alkali side of the scale the potency is lowered more than when acids are added. In the original assay the decrease was proportional to the alkalinity. With a p_H of 6.4 there is a fall of 50%; and with a p_H of 8.1, a loss of 83.3% when compared with the normal. At the end of the year a second assay showed further decrease of 27.3% to 44.4% for those kept at room temperature. The ultimate potency of all these tinctures was approximately the same. Nevertheless compared with the normal all the KOH tinctures displayed a decrease of 116.7%. Those kept in the refrigerator had a loss of 9.1% to 33.3% from the original value. When compared with the normal tincture, the decrease was 100%.

When NaOH was used we obtained p_H values of 6.5 to 8.5 with a resulting change similar to that effected by KOH. The initial decrease ranged from 50% to 66.7%, while at the end of the year an additional loss of 40% to 44% was noticed. Comparison with the normal was 116.7% to 133.3%.

With the last chemical used, Na_2CO_3, p_H values of 6.2, 6.8 and 7.5 were acquired. The same initial decrease was found with the other two alkalies. Nevertheless at the end of the year of storage the greatest of all losses in potency was shown; a decrease of 40% to 55.6% from the original being equal to a 133.3% to 150% from the normal, regardless of the method of storage.

VI. DISCUSSION.

It is evident from the results obtained that a change in the hydrogen-ion concentration is not indicated for tincture of digitalis, a product showing at least a 30% decrease in potency is obtained when the p_H is changed. Results from the various experiments show that alkalies are more detrimental to the active constituents of digitalis than are acids. This being in agreement with the findings of Wokes (2). By comparison it was found that acids cause a decrease in potency of 33.3% to 50% while the alkalies a lowering of 50% to 66.7%. When either acid or alkali menstruums are used the decrease in potency is proportional to the change in the hydrogen-ion concentration.

The question of storage is still a great problem. Low temperatures seem to

have only a very slight advantage over higher temperatures. Thus the refrigerator is of very little use as a means of storage. The replacing of the oxygen with a non-oxidizing gas, carbon dioxide, inhibits deterioration to a slight degree.

Sealing with paraffin to have the container air tight, proved useless since the results show some loss of potency whether the container was sealed or unsealed.

It is to be noted that the assay of all the tinctures at the end of a year of storage shows them to be of approximate equality, regardless of the original activity. It would seem that after a period of time an equilibrium is reached when no further destruction of glucosides occurs, disregarding the method of manufacture and the conditions of storage. This may be due to an inactivation of the added alkali or acid, or may be due to the fact that some of the glucosides are stable and not destroyed while others are labile and readily broken up in an acid or alkali medium. This process probably occurs in the normal tincture also, since there is comparable loss in activity.

The exact mechanism involved in this process of deterioration is at present not known but is the subject of further investigation.

VII. CONCLUSIONS.

1. Increasing or decreasing the p_H of the menstruum in making tincture of digitalis produces an inferior product.

2. Storage at room temperature, or 6° C., has no differential effect on the keeping qualities of this preparation.

3. Tincture of digitalis stored in sealed or unsealed containers deteriorates to the same degree.

4. Displacing the air in a container with carbon dioxide has but a slight inhibitory action on the deterioration.

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STUDIES ON THE PREPARATION, TOXICITY AND ABSORPTION OF BISMUTH COMPOUNDS. I. BISMUTH SALTS OF FATTY ACIDS.*

BY W. M. LAUTER, A. E. JURIST AND W. G. CHRISTIANSEN.

While a great many clinical reports have been made describing the results obtained with bismuth salts of fatty acids in the treatment of syphilis, very little has been published concerning the results obtained in carefully controlled experimental studies on animals. Most of the results so far published are concerned chiefly with the excretion of bismuth giving very little accurate data concerning the relative toxicity and absorption of these compounds. The purpose of these studies is to compare these substances with a number of other types of bismuth

* Scientific Section, A. PH. A., Toronto meeting, 1932.

compounds from the standpoint of toxicity and absorption and also to describe the methods used in preparing them. Some information on the subject is already available in the publications of Ritz (1), Von Oettingen (2), and Von Oettingen and Sollmann (3).

In this paper a number of bismuth salts of fatty acids of different types will be compared from the standpoint of absorption, but the results obtained with bismuth compounds of other types will be considered in subsequent papers. The fatty acids which were used in preparing the bismuth compounds include saturated acids with varying numbers of carbon atoms, unsaturated acids, hydroxy acids, dibasic acids and fatty acids containing a ring structure.

The method used in the study of these fatty acid derivatives of bismuth was to prepare olive oil suspensions or solutions of known bismuth concentration with or without the addition of an excess of the fatty acid from which the bismuth salt was prepared. These suspensions or solutions were then injected intramuscularly into albino rats. The toxicity of the compound was then estimated from the growth curves of the animals while the absorption was determined by killing the animals after a period of 27 to 35 days after injection and determining by analysis any unabsorbed bismuth still remaining at the site of injection.

The results of the absorption studies on these substances are given in the following table. The data includes the nature of the medium in which they were injected, the bismuth concentration, and the total bismuth injected into a single animal.

TABLE I.

Compound Injected.	Nature of Medium for Injection.	Dosage Mg. Bi/Cc.	Total Bismuth Injected in Mg./Kg. Body Weight.	Per Cent Absorption.
Bismuth oleate	Olive oil	50	190	22
Bismuth myristate	Olive oil	20	95	19
Bismuth laurate	Olive oil	50	250	17
Bismuth palmitate	Olive oil	20	100	27
Bismuth stearate	Olive oil	25	115	36
Bismuth isolinolate	Olive oil	37.5	200	48
Oleo-bi	Olive oil	50	235	16
Bismuth azelate	Olive oil and azelaic acid	50	160	66
Bismuth ricinoleate	Olive oil and ricinoleic acid	50	165	93
Bismuth azelate	Olive oil	50	165	78
Bismuth α-octyl-α-hydroxysebacate	Olive oil	50	165	47
Bismuth 9,10 - dihydroxystearate	Olive oil	30	180	50
Basic bismuth chaulmoograte	Olive oil	35	185	58
Bismuth chaulmoograte	Olive oil and chaulmoogric acid	50	175	52
Bismuth ricinoleate	Olive oil	30	185	40
Bismuth hydnocarpate	Olive oil	40	175	50
Bismuth ricinoleate	Olive oil and ricinoleic acid	30	200	78
Bismuth ricinoleate	Olive oil and ricinoleic acid	30	200	48

These results show that the bismuth compounds of fatty acids are, as a rule, only slightly absorbed. Even in a period of four to five weeks more than 90% of the

bismuth was absorbed in only one instance, namely, bismuth ricinoleate in olive oil with additional ricinoleic acid. In eight instances more than 50% of the bismuth was absorbed. The average absorption was 47% considering all the substances tested. It is impossible to state from these results that any particular type of fatty acid gives a bismuth salt which is more readily absorbed than any other type. It is, however, quite apparent that absorption was unsatisfactory in every instance. The poor absorption obtained with these water-insoluble preparations contrasts strongly with the rapid and complete absorption obtained with water-soluble bismuth compounds. Owing to the very slow and irregular absorption obtained with these compounds no accurate determination of their relative toxicity can be made but since the lowest dosage used was 95 mg. of bismuth per Kg. body weight in the case of bismuth myristate and the highest dosage used was 250 mg. per Kg. of body weight in the case of bismuth laurate and since the average dosage for all the compounds tested was 174 mg. of bismuth per Kg. of body weight, it is quite evident that they are relatively low in toxicity.

These results clearly indicate that the bismuth salts of the fatty acids are relatively unsatisfactory therapeutic agents because their irregular and slow absorption would tend to give variable and unreliable clinical results.

EXPERIMENTAL PART.

The preparation of the various bismuth salts used in these solutions or suspensions is briefly described. It was found advisable in all of these preparations to remove any unreacted free acid by washing with acetone. When alcohol was used in place of acetone it was found that the bismuth compounds were decomposed so that the end product was usually a mixture of monobasic and dibasic bismuth salts, free fatty acid and bismuth hydroxide.

PREPARATION OF THE BISMUTH SALTS OF UNSATURATED FATTY ACIDS.

Bismuth Oleate.—28 Gm. of oleic acid were dissolved in 170 cc. of 95% alcohol, 30 cc. of water and 3.98 Gm. of sodium hydroxide. To this was added a solution of 16 Gm. of bismuth nitrate pentahydrate in 13 Gm. of mannite and 100 cc. of water in a fine stream with constant agitation. A white precipitate formed which quickly coagulated to a gummy mass. After several hours standing the supernatant liquid was decanted and the white mass was washed three times with water, being allowed to stand over night with the third washing. The solid was then dried *in vacuo* over caustic soda for 48 hours. The pale cream-colored paste thus obtained was not pure so that it was extracted with acetone to remove any uncombined fatty acids. The residue from this extraction was then washed three times with acetone and dried at 95° C. The yellowish white powder so obtained was a dibasic bismuth oleate.

Calcd. for $C_{17}H_{33}CO_2Bi(OH)_2$: Bi, 39.75%; $C_{17}H_{33}CO_2$, 53.76%. Found: Bi, 40.60%; $C_{17}H_{33}CO_2$, 48.30%.

Oleo-Bi.—This product was examined by suspending the contents of an ampul in acetone. The white solid which separated was collected in a centrifuge and washed with acetone. When dry the product was identical with the bismuth oleate described above.

Calculated for $C_{17}H_{33}CO_2Bi(OH)_2$: Bi, 39.75%; $C_{17}H_{33}CO_2$, 53.76%. Found: Bi, 39.12%; $C_{17}H_{33}CO_2$, 47.02%.

Bismuth Linolinate.—The linolinic acid used in this preparation was obtained from linseed oil. It contained some oleic, linoleic and isolinoleic acids. The bismuth compound which was prepared in the same manner as bismuth oleate was a yellow solid.

Calculated for $C_{17}H_{31}CO_2Bi(OH)_2$: Bi, 40.0%; $C_{17}H_{31}CO_2$, 53.5%. Found: Bi, 39.7%; $C_{17}H_{31}CO_2$, 52.6%.

PREPARATION OF THE BISMUTH SALTS OF SATURATED FATTY ACIDS.

Bismuth Stearate.—This compound is a bulky, white solid which was prepared in substantially the same manner as the oleate. The product obtained here, however, was the tristearate and not a dibasic substance containing but one fatty acid radicle.

Calculated for $(C_{17}H_{35}CO_2)_3Bi$: Bi, 19.7%; $(C_{17}H_{35}CO_2)$, 80.3%. Found: Bi, 20.6%; $C_{17}H_{35}CO_2$, 74.4%.

Bismuth Palmitate.—This compound was prepared in the same manner as the oleate. It is a white powder.

Calculated for $(C_{15}H_{31}CO_2)_3Bi$: Bi, 21.46%; $C_{15}H_{31}CO_2$, 78.54%. Found: Bi, 19.47%; $C_{15}H_{31}CO_2$, 74.60%.

Bismuth Myristate.—This compound was prepared in the same manner as the oleate. It is a white solid.

Calculated for $(C_{13}H_{27}CO_2)_3Bi$: Bi, 23.38%; $C_{13}H_{27}CO_2$, 76.62%. Found: Bi, 25.47%; $C_{13}H_{27}CO_2$, 66.06%.

This compound was chiefly bismuth trimyristate containing some basic bismuth myristate.

Bismuth Laurate.—This was prepared in the same manner as the oleate. The white powder obtained was a mixture of monobasic and dibasic bismuth laurates as the following results show:

Calculated for $(C_{11}H_{23}CO_2)_2BiOH$; Bi, 33.47%; $C_{11}H_{23}CO_2$, 63.70%. Calculated for $C_{11}H_{23}CO_2Bi(OH)_2$: Bi, 47.3%; $C_{11}H_{23}CO_2$, 45.0%. Found: Bi, 36.78%; $C_{11}H_{23}CO_2$, 57.94%.

It is interesting to note that the unsaturated fatty acids yield chiefly dibasic bismuth salts and that the saturated fatty acids yield salts which are not basic until the length of the carbon chain and its molecular weight decreases. The fatty acids of lower molecular weight yield mixtures containing monobasic and dibasic salts.

THE PREPARATION OF BISMUTH SALTS OF DICARBOXYLIC FATTY ACIDS.

Bismuth Azelate.—Five Gm. of azelaic acid were dissolved in 25% alcohol and neutralized with alcoholic potash. While stirring, 35 cc. of a 16% solution of bismuth nitrate pentahydrate and 13% mannite were added. The white precipitate obtained was washed with water and dried. A monobasic bismuth salt was obtained.

Calculated for $C_7H_{14}(CO_2)_2BiOH$: Bi, 50.00%; $(CH_3)_7(CO_2)_2$, 45.1%. Found: Bi, 50.00%; $(CH_2)_7(CO_2)_2$, 42.3%.

Bismuth α-Octyl-α-Hydroxysebacate.—The same method was used as in the preparation of the oleate. The product was a white solid. The compound was a mixture of two or more bismuth salts.

Found: Bi, 42.2%; $(C_8H_{17})(OH)(C_8H_{16})(CO_2)_2$, 51.1%.

PREPARATION OF THE BISMUTH SALTS OF HYDROXY FATTY ACIDS.

Bismuth 9,10-Dihydroxystearate.—Ten Gm. of 9,10-dihydroxy stearic acid were dissolved in a hot mixture of 200 cc. of alcohol and 20 cc. of water; 1.27 Gm. of sodium hydroxide were added, and while stirring, 35 cc. of 16% bismuth nitrate pentahydrate and 13% mannite in water solution were added. The white precipitate which formed was washed with acetone to remove unreacted acid and dried. The product was a white solid. It was a mixture of the monobasic and dibasic salts according to the analysis.

Calculated for $(C_{18}H_{35}O_4)_2BiOH$: Bi, 23.96%; $C_{18}H_{35}O_2$, 72.18%. Calculated for $C_{18}H_{35}O_4Bi(OH)_2$: Bi, 37.4%; $C_{18}H_{35}O_4$, 56.4%. Found: Bi, 28.2%; $C_{18}H_{35}O_4$, 64.6%.

Bismuth Ricinoleate.—Twenty Gm. of ricinoleic acid were dissolved in alcoholic sodium hydroxide and the bismuth compound was precipitated by the addition of $^1/_3$ of an equivalent of the same bismuth nitrate solution used in other preparations. The yellow paste was washed with water and extracted with acetone. The final product obtained was a white solid, which on analysis was found to be a mixture of a monobasic bismuth salt and other bismuth salts.

Calculated for $C_{17}H_{33}OCO_2Bi(OH)_2$: Bi, 38.7%. Found: Bi, 44.38%.

PREPARATION OF BISMUTH SALTS OF FATTY ACIDS CONTAINING RING STRUCTURES.

Bismuth Chaulmoograte.—The chaulmoogric acid used was obtained from the saponification of chaulmoogra oil. This material was then recrystallized twice from 90% alcohol. The solid so obtained was contaminated by some hydnocarpic acid. Six Gm. of chaulmoogric acid were dissolved in 80% alcohol and treated with three equivalents of bismuth nitrate solution. The precipitate formed was washed with water and then extracted with acetone, leaving a solid which was chiefly the dibasic bismuth salt of chaulmoogric acid containing some bismuth hydnocarpate.

Calculated for $C_{17}H_{31}CO_2Bi(OH)_2$: Bi, 39.28%; $C_{17}H_{31}CO_2$, 52.45%. Found: Bi, 45.3%; $C_{17}H_{31}CO_2$, 45.5%.

Bismuth Hydnocarpate.—The hydnocarpic acid recovered from the purification of chaulmoogric acid was used in this preparation; 18 Gm. of acid were dissolved in 20% alcohol with the aid of alcoholic potash. The white solid bismuth compound was then precipitated by the addition of $^1/_3$ of an equivalent of bismuth nitrate solution. The white pasty precipitate obtained contained 19.53% of bismuth when dried.

The biological tests on these compounds were carried out in the Biological Laboratories of E. R. Squibb and Sons, New Brunswick, N. J.

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DETECTION OF DEXTROSE AND SUCROSE IN LACTOSE.

BY JOSEPH ROSIN AND F. C. HITCHCOCK.

The U. S. P. test for absence of dextrose and sucrose in Lactose is based on the greater solubility of the first two sugars in 70% alcohol, than of the latter. The test is as follows:

> Add 20 cc. of 70 per cent (by volume) alcohol to 2 Gm. of finely powdered lactose, shake the mixture frequently during half an hour at 15° C., and filter. A 10-cc. portion of the filtrate remains clear after mixing with an equal volume of dehydrated alcohol (dextrin), and this liquid upon evaporation on a water-bath leaves not more than 0.03 Gm. of residue (sucrose or glucose).

The 0.03 Gm. of residue permitted represents the quantity of lactose dissolved under the condition of the test. If dextrose or sucrose is present to any appreciable extent, the residue will be much greater.

Lactose was first introduced in the 1860 revision of the U. S. P. In the 1880 revision a charring test, with sulphuric acid, for sucrose was included. The alcohol solubility test for sucrose was first introduced in the 8th revision of the Pharmacopœia and has been continued in the subsequent revisions. The British, Netherlands, Swiss and some of the other Pharmacopœias also use, although with some modifications, the alcohol solubility in testing for sucrose. This test, up to a few years ago, worked very well. It is quite simple and, with one stroke, eliminates both sucrose and dextrose. Within recent years, however, objections have been voiced against this test. It is maintained that, owing to the application in the milk sugar industry, of modern manufacturing methods, such as spray drying, some amorphous lactose is produced. This form of lactose is more soluble in alcohol than the crystalline product and, consequently, yields more residue in the test. It has also been claimed, although it has not been proved yet, that some beta-lactose may be formed which has even a greater solubility in 70% alcohol than the amorphous variety. The amount of these varieties of lactose dissolved by 10 cc. of 70% alcohol are, approximately, of the following order:

Lactose, crystalline	0.03 Gm.
Lactose, dehydrated at 120° C.	0.095 Gm.
Lactose, amorphous	0.105 Gm.
Beta-lactose, crystalline	0.125 Gm.

From this it is evident that the presence of even small quantities of the other forms of lactose would yield more residue in the test, and thus give an erroneous indication of the presence of dextrose or sucrose.

To meet this condition the producers of lactose recommended to the present Revision Committee of the Pharmacopœia that the test now official be replaced by tests specific for dextrose and sucrose.

Barfoed's Reagent forms a very delicate test for dextrose. Hinkel & Sherman (*J. Am. Chem. Soc.*, 29 (1907), 1744) have studied the use of this reagent for the detection of dextrose in the presence of other sugars. They found that, by using 5 cc. of the reagent, the presence of 0.0004 Gm. of dextrose can be shown, either alone or when mixed with di-saccharide, provided that the total weight of di-saccharide does not exceed 0.02 Gm., and the time of heating, at the boiling water temperature, be not greater than about 3 minutes. Based on this work, F. P. Nabenhauer has proposed for the consideration of the Revision Committee the following test for dextrose:

> Two Gm. of the sugar (lactose) are treated with 20 cc. of 70% alcohol and shaken frequently for 30 minutes at room temperature, then filtered. Part of the filtrate may be tested for dextrin according to the U. S. P. X. Ten cc. are evaporated to dryness on a water-bath and redissolved in 5 cc. of water. This is mixed with 5 cc. of Barfoed's reagent (13.3 Gm. copper acetate dissolved in 200 cc. 1 per cent acetic acid) and heated in a test-tube in boiling water for three minutes. The presence of as little as 0.1% of glucose is indicated by a precipitate of cuprous oxide.

The sixth edition of the German Pharmacopœia makes use of the Seliwanoff reaction for the detection of sucrose in milk sugar. This test is based on the formation of a red or orange-red color by the action of resorcin on levulose in the presence of hydrochloric acid. Sucrose when treated with hydrochloric acid hydrolyzes into levulose and dextrose. Mr. Nabenhauer has accordingly suggested the German Pharmacopœia test for sucrose. The test is made as follows:

> One Gm. of lactose is dissolved in 9 cc. of water. Add 0.1 Gm. resorcinol and 1 cc. of concentrated HCl. Boil for 5 minutes. A yellow color may form, but a red coloration indicates the presence of sucrose.

We investigated both of these tests. We found the method for dextrose to work very smoothly, and our experiments confirm the sensitiveness claimed for it. We found it, however, preferable to let the liquid stand for 20–25 minutes after the heating, before examining for cuprous oxide. When only a small quantity of cuprous oxide is formed it remains suspended for some time, and although it is recognizable by the color of the liquid the indication is not as certain as when it has subsided. Samples of pure lactose, U. S. P. lactose and of lactose containing 0.15% sucrose did not deposit any cuprous oxide when subjected to this test and allowed to stand for one hour.

The German Pharmacopœia's procedure for sucrose did not prove entirely satisfactory. The color produced after heating the mixture was not uniform. In experiments with mixtures of lactose and sucrose, the increase in the color with increased amounts of sucrose was so gradual that it was difficult to determine with certainty just where a positive test was unmistakable. Sometimes 0.5% sucrose seemed to be readily detected, while at other times it took one per cent or more to give a positive reaction. To be at all reasonably sure of the results it is necessary to run a control with pure lactose. This, however, would hardly be practical for the U. S. P.

It soon became apparent that the chief factor interfering with a sharp definition of the test is the lactose itself. Extraction of the sucrose from the lactose with alcohol, thereby eliminating the greater part of the lactose, naturally suggested itself. Two grams of the finely powdered lactose (100 mesh or finer) were

shaken frequently during one-half hour, at room temperature, with 20 cc. of 95% alcohol, filtered and 10 cc. of the filtrate evaporated on the steam-bath. The residue was dissolved in 9 cc. of water, transferred to a test-tube and the test completed as in the German Pharmacopœia. Lactose containing 1% sucrose gave a sharp positive reaction—a reddish yellow color. With 0.5%, however, the reaction was not decisive.

Further experiments have shown that 70% alcohol sufficiently excluded lactose so that no interference from it was encountered, and at the same time the sucrose was extracted in sufficient amount to make 5 to 4 mg. (0.5–0.4%) of sucrose readily detectable. Further, when lactose with one per cent of sucrose was extracted with 70% alcohol, using 10 cc. of the alcohol per Gm. of the sugar, and the residual lactose re-extracted etc., as before, no reaction for sucrose was obtained from the second extraction, showing that 70% alcohol dissolved all, or substantially all, of the sucrose in the first extraction.

Pure lactose, or lactose with added 1% of dextrose or galactose, extracted with 70% alcohol (2 Gm. + 20 cc.) and then treated as described before gave, at most, only a slight yellow color.

The threshold of the sensitiveness of the Seliwanoff test for sucrose in lactose by the method described we found to be at about 2.5 mg.; also that 5 cc. of 70% alcohol per Gm. of lactose will extract, from lactose containing 0.5% sucrose, sufficient of the latter to give as sharp a reaction as when using 10 cc. alcohol per Gm. It follows that by using larger quantities of lactose the test can be made to detect much smaller *percentages* of sucrose.

Samples of pure lactose, and of the lactose admixed with dextrose, sucrose or dextrin, were then submitted to a chemist in another of our laboratories with the directions for testing. The composition of these samples was, of course, not revealed to him.

DIRECTIONS.

Add 50 cc. of 70% alcohol (by volume) to 10 Gm. of the finely powdered lactose. Shake the mixture frequently during half an hour, filter through a small filter (about 9 cm.).

1. Evaporate to dryness 10 cc. of the alcoholic filtrate, dissolve the residue in 5 cc. water, add 5 cc. Barfoed's reagent (13.3 Gm. crystallized copper acetate, 5 cc. 36% acetic acid, water to make 200 cc.), heat in a thin-walled test-tube in boiling water or actively flowing steam exactly three minutes and let stand at room temperature ten minutes. No deposit of red cuprous oxide should be observed (*dextrose*).

2. Evaporate to dryness 25 cc. of the filtrate, dissolve the residue in 9 cc. of water, add 1 cc. 25% HCl and 0.1 Gm. resorcin. Transfer to a thin-walled test-tube and heat for five minutes by immersing the tube in boiling water or actively flowing steam. The liquid should remain colorless or nearly so. A distinct yellow to orange color indicates *sucrose*. He reported:

TABLE I.

	Dextrose.	Sucrose.	Dextrin.	Remarks.
Sample No. 1 (pure lactose + 0.066% sucrose)	No precipitate	Distinctly yellow	Does not show	The residue, after evaporation of the alcohol, from numbers 1, 3 and 5, gave a cloudy solution with water which interfered somewhat with the test for dextrose
Sample No. 2 (pure lactose + 0.5% dextrin)	No precipitate	Not detectable	.....	
Sample No. 3 (pure lactose + 0.04% dextrose)	Barely visible slight red precipitate obscured by whitish flocks	Not detectable	.....	
Sample No. 4 (U. S. P. grade of lactose)	Not detectable	Not detectable	.....	

Sample No. 5 (pure lactose + 0.05% dextrose + 0.05% sucrose)	Barely visible red precipitate obscured by whitish flocks	Doubtful	.....
Sample No. 6 (U. S. P. grade of lactose)	No precipitate	Not detectable	.....
Sample No. 7 (pure lactose + 0.025% dextrose)	No precipitate	Not detectable	.....

Further experiments have shown that heating for a few minutes longer, 8 minutes instead of 5, brought out the color given by sucrose more sharply. In control tests made with sucrose-free lactose the longer heating did not appreciably increase the color of the solution. This makes it also possible to detect with this test smaller quantities of sucrose.

Another set of "unknowns" was submitted to the same chemist to be tested for dextrose and sucrose with the following directions:

Shake frequently, during one-half hour, 10 Gm. of the sample with 50 cc. of 70% volume alcohol and filter.

Dextrose.—Apply the same test as before to 5 cc. and to 10 cc. of the filtrate and observe for precipitation of cuprous oxide after 10 and after 20 minutes standing.

Sucrose.—Apply the resorcin test as before to 10 cc. and to 15 cc. of the filtrate, and heat for 8 minutes instead of 5 minutes.

TABLE II.

Sample.	Dextrose. 5 cc. after 10 min.	5 cc. after 25 min.	10 cc. after 10 min.	10 cc. after 20 min.	Sucrose. 10 cc.	15 cc.
"D"						
U. S. P. grade of lactose	No precip.	No precip.	No precip.	No precip.	Almost colorless	Very slightly yellow
"E"						
Same lactose as "D" + 0.1 per cent sucrose	No precip.	No precip.	No precip.	No precip.	Slight yellow	Distinctly yellow
"F"						
Same lactose as "D" + 0.1 per cent dextrose	Very slight precip. of Cu_2O	Distinct precip. of Cu_2O	Distinct precip. of Cu_2O	Distinct precip. of Cu_2O	Very slightly yellow	Very slightly yellow

These results practically confirm the threshold limits we found for these tests and those indicated by Table I—about 0.7 mg. and possibly a little less, for dextrose, and about 2 mg. for sucrose. For the purpose of the U. S. P. tests capable of detecting about 0.1% of dextrose and about 0.15% of sucrose should certainly suffice.

The following tests for dextrose and sucrose are accordingly recommended:

Add 25 cc. of 70% alcohol (by volume) to 5 Gm. of lactose powdered to 100 mesh or finer. Shake the mixture frequently during 30 minutes and filter through a dry filter of 7 to 9 cm. diameter. Evaporate 5 cc. of the filtrate on the steam-bath and dissolve the residue in 5 cc. of water. Transfer the solution into a test-tube, filtering if necessary, add 5 cc. of Barfoed's reagent,[1] immerse the test-tube in boiling water or in actively flowing steam for 3 minutes and allow to stand at room temperature for 25 minutes. No red precipitate is produced (dextrose).

[1] Barfoed's reagent is made by dissolving 13.3 Gm. cupric acetate in a mixture of 195 cc. of water and 5 cc. of acetic acid to make 200 cc

Evaporate another portion of 10 cc. of the alcoholic filtrate on the steam-bath, dissolve the residue in 9 cc. of water, add 1 cc. of 25% hydrochloric acid (made by mixing 22 cc. of hydrochloric acid with 7 cc. of water) and 0.1 Gm. of resorcin. Transfer the mixture to a thin-walled test-tube of 16 to 19 mm. internal diameter and immerse the test-tube in boiling water or, preferably, in actively flowing steam, for 8 minutes. At the end of this time the liquid is colorless or not more than slightly yellow. A distinct yellow or reddish yellow color indicates sucrose.

Dextrin.—It is noted from the results in Table I, that the U. S. P. test failed to reveal 0.5% dextrin. At first we were surprised at this, but upon second thought we realized that, to the contrary, it would be surprising if it did work. Pure dextrin is quite insoluble in 95% alcohol, even in hot, and it could hardly be expected that it would dissolve under the condition of the test to any appreciable extent in 70% alcohol. In fact when one Gm. of the same dextrin that was used for mixing with lactose was shaken with 20 cc. of 70% alcohol, filtered, the filtrate evaporated, the residue when dissolved in water gave only a reddish yellow color with a drop of iodine T.S., showing that only a trace of dextrin dissolved in the alcohol.

Since iodine gives characteristic colors with aqueous solutions of dextrin, we applied it for the detection of dextrin in lactose and found it eminently satisfactory. One gram of the lactose was dissolved in 10 cc. of water, the solution heated for one minute, cooled and a drop of iodine T.S. added. Several U. S. P. grade samples examined in this manner gave no color other than the yellow due to iodine, while lactose mixed with 0.1% dextrin produced a decided violet to blue color.

Smaller proportions of dextrin, 0.5 to 0.3 mg., are also readily detectable by this method, provided the iodine solution is more dilute, otherwise the yellow color of the unconsumed iodine obscures the brilliancy of color given by the dextrin. One drop of an iodine solution, made by diluting 1 volume of iodine T.S. with 4 volumes of water, gives a distinct violet to blue color with 0.5 mg. dextrin in the presence of one Gm. of lactose. Starch will, of course, also give a blue color with the diluted iodine. The U. S. P. test for starch in lactose serves, therefore, for dextrin as well and to embody the foregoing observation of the obscureness of the dextrin-iodide color with small quantities of dextrin, it is recommended that the U. S. P. test for starch be rewritten as follows:

Dissolve one Gm. of lactose in 10 cc. of water, boil for one minute, cool to room temperature and add one drop of iodine solution made by diluting one volume of iodine T.S. with 4 volumes of water. No red, violet or blue is produced (dextrin, starch).

We are indebted to Dr. W. Schnellbach for valuable assistance in this work.

MERCK & CO., INC.,
RAHWAY, NEW JERSEY.

THE RESISTANCE OF MINERAL OILS TO DECOMPOSITION BY SUNLIGHT.*

BY L. W. GREEN AND R. E. SCHOETZOW.

Observations of the behavior of many samples of mineral oils, over a number of years, have given evidence that a variation exists in different samples in regard to susceptibility to spoiling, when bottled oil is exposed to sunlight, and lead to the belief that the geographical source of the oil has influenced its stability.

* Scientific Section, A. PH. A., Toronto meeting, 1932.

In order to obtain more concrete evidence on this subject and, if possible, develop a test that might serve to measure light stability, we obtained sufficient quantities of the most widely sold, bottled mineral oils which, to the best of our knowledge, represented different geographical sources. We designated these as A, B and C.[1] For convenience, we re-subdivided the oil into 4-oz. screw-cap filma-sealed, flint bottles. A dozen of each variety was placed in a horizontal position in a large enameled tray. This was covered with $^1/_4$" plate glass for protection against weather and then placed where it would be exposed to sunlight during the entire day. Periodically, bottles of each variety of oil were opened and the samples examined for odor and taste.

Sample B developed a definite off taste after exposure to sunlight for thirteen hours. Sample A was somewhat more resistant and developed a slightly disagreeable off taste in twenty-one hours. As periodic examinations were continued, samples A and B gradually became worse until both had an exceedingly disagreeable odor and taste. Sample C was much more resistant to light. Only after an exposure to 170 hours of sunshine, did it develop a detectable off taste.

In order to develop a test which would predict the resistance of mineral oil to decomposition by sunlight, we considered the effect of ultraviolet light.

Using a Cooper-Hewitt ultraviolet light machine, we placed 4-oz. samples of A, B and C, contained in flint bottles, in a horizontal position on a table whose surface was 36 cm. from the quartz mercury lamp. The samples were examined periodically for taste and odor with the following results:

Exposure in Hours.	Observations.
3	All tasteless and odorless.
5	All tasteless and odorless.
13	All tasteless and odorless.
24	Sample A—faint off odor and taste.
	Sample B—definite off odor and taste.
	Sample C—tasteless and odorless.
40	Samples A and B—strong off odor and taste.
	Sample C—faint off odor and taste.
49	Samples A and B—strong off odor and taste.
	Sample C—definite off odor and taste.

The above exposures to ultraviolet light agree with actual exposures to sunlight. Sample B was found poorest by both treatments. Sample A was found more resistant by both treatments. Sample C was found much more resistant than A or B by both treatments.

CONCLUSIONS.

It has been shown that:

1. Heavy liquid petrolatum U. S. P., of varying geographical origin, differs considerably in resistance to spoiling by exposure to sunlight, in flint-glass bottles.

2. The light stability of liquid petrolatum can be measured by comparatively short exposures of the oil, in flint bottles, to ultraviolet light.

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E. R. SQUIBB & SONS.

[1] This product is labeled "Heavy Californian."

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May the ability to give be part of your Christmas Happiness and Joy. May you participate in a returning prosperity and enjoy the blessings of good health.

The Season's Greetings with wishes for a Merry Christmas and a more Prosperous New Year.

THE HYDROGEN-ION CONCENTRATION OF OINTMENT OF ROSE WATER.

BY JOHN C. KRANTZ, JR., AND C. JELLEFF CARR

INTRODUCTION.

The Ointment of Rose Water in various modifications has been used in American pharmacy for more than a half century. The original Unna (1) formula contained no borax. It was observed by Vomacka (2) that borax facilitated the mixing of the fatty substances with the aqueous fluid. Many modifications of these earlier formulas have been suggested, but the original formula of Vomacka is essentially the official ointment in the present edition of the Pharmacopœia. The official Ointment of Rose Water has not been adequately discussed by any of the leading textbooks on pharmacy. Pharmaceutical authors are of the opinion that the presence of borax in the ointment is necessary to impart the desirable "whiteness." On the other hand, however, they point out that its presence makes the ointment incompatible with alkaloidal salts, mercurous chloride and other substances.

In 1930 Scoville (3) engaged in a preliminary study of the purpose of borax in this ointment. In his communication to THIS JOURNAL, Scoville pointed out that the problem needed further study. His reasons were twofold; *first*, the possibility of eliminating borax from the ointment would be of practical importance, *second*, the solution of the problem may elucidate our knowledge of pharmaceutical emulsions in general. With these purposes in mind this investigation was begun.

EXPERIMENTAL.

1. Surface Tension Measurements.—Various substitutes for borax were chosen, and their surface tensions measured by means of the Du Noüy tensiometer (4). The molar concentration of borax in Rose Water as employed in the ointment is 0.069.

The results of these measurements are given in Table I.

TABLE I.—SURFACE TENSION MEASUREMENTS 24° C.

No.	Compound.	Concentration.	Surface Tension Dynes per Cm.
1	$Na_2B_4O_7.10H_2O$	0.069 M.	63.7
2	$Na_2CO_3.H_2O$	0.069 M.	69.5
3	$NaHCO_3$	0.069 M.	71.3
4	$Na_4P_2O_7.10H_2O$	0.069 M.	62.7
5	NaOH	0.100 M.	67.7
6	NaOH	0.010 M.	70.7
7	Sodium ricinoleate	0.031 M.	42.7
8	Hexylresorcinol	Sat. aqueous sol.	38.0

2. Hydrogen-Ion Concentration Measurements.—The p_H of certain of the solutions which were employed in the preparation of Ointment of Rose Water was measured electrometrically. The hydrogen electrode Wilson (5) type was employed for all solutions with the exception of sodium bicarbonate. The p_H of this solution was calculated from the dissociation constants of carbonic acid.

The results of these measurements are given in Table II.

TABLE II.—HYDROGEN-ION CONCENTRATION MEASUREMENTS.

No.	Compound.	Concentration.	p_H.
1	$Na_2B_4O_7.10H_2O$	0.069 M.	9.17
2	$Na_2CO_3.H_2O$	0.069 M.	11.30
3	$NaHCO_3$	0.069 M.	8.37
4	$Na_4P_2O_7.10H_2O$	0.069 M.	9.92
5	NaOH	0.100 M.	12.76
6	NaOH	0.010 M.	11.71
7	Sodium ricinoleate	0.031 M.	7.70

3. Preparation of the Ointment.—Using these various solutions in place of borax, ointments were prepared according to the official process. Electrical stirring was employed and all of the conditions and manipulations involved in the manufacture were kept as uniform as possible.

4. Evaluation of the Ointments Obtained.—Various plasticity experiments were attempted to evaluate the consistency of the ointments. Not any of these was considered to be satisfactory and the simple manipulation test observing which ointments separated water was employed.

The ointments are graded in Table III according to their capacity to retain water under the influence of manipulation.

TABLE III.—CHARACTER OF OINTMENTS.

No.	Compound.	Retention of Water.	Color.	p_H.
1	$Na_2B_4O_7.10H_2O$	Excellent	White	8.9
2	$Na_2CO_3.H_2O$	Excellent	White	9.5
3	NaOH 0.1 M.	Excellent	White	8.8
4	Magnesium oleate	Excellent	White	7.6
5	$Na_4P_2O_7.10H_2O$	Excellent	White	8.3
6	Water	Poor	Cream	...
7	Hexylresorcinol	Poor	Cream	...
8	NaOH 0.01 M.	Poor	Cream	...
9	Sodium ricinoleate	Fair	Cream	...
10	NaCl	Poor	Cream	...
11	$NaHCO_3$	Poor	Cream	...

DISCUSSION OF RESULTS.

In addition to the ingredients mentioned in the foregoing paragraphs an attempt was made to prepare an ointment using all unsaponifiable (paraffin and petrolatum) fat-like substances. No satisfactory ointment could be prepared. However, upon the addition of a small amount of soap, emulsification did take place. In this connection it is interesting to relate that in 1895 Rouillion (6) recommended the addition of a saturated solution of soap in benzin to this ointment which was prepared without borax. This immediately raised the question as to whether or not the preparation of the ointment depended upon a surface tension reductant like soap or an alkaline substance of the nature of borax. Scoville used quinic acid, a surface tension reductant, in place of borax. His results were not satisfactory. To answer this question the present authors employed a practically neutral saturated solution of hexylresorcinol in water. This is a very powerful surface tension reductant as shown by Leonard and Frier (7). This substance produced a very unsatisfactory ointment.

From this experiment the authors concluded that an alkaline substance which produced a partial saponification of the fats present was necessary. Accordingly, various salts were employed which imparted an alkalinity to the aqueous fluid. All of these substances produced a satisfactory ointment with the exception of sodium bicarbonate and 0.01 molar sodium hydroxide solution. In the case of the former the alkalinity of p_H 8.37 is thought not to be adequate to produce sufficient saponification of the fats. With the latter substance, although the p_H is quite high the molar concentration of the salt is approximately one-seventh of that of sodium borate. The validity of this view is shown by the fact that by increasing the concentration of sodium hydroxide tenfold, a satisfactory product can be obtained.

Ointment of Rose Water is evidently an emulsion of the water-in-oil type. Newman (8) working in Bancroft's laboratory in 1914 observed that univalent salts of oleic acid emulsified benzene in water, whereas divalent salts of oleic acid produced water-in-oil emulsions. This work was extended by one of us (J. K.) with Gordon (9) in 1928. Hence it occurred to the authors to employ magnesium oleate in the preparation of the ointment. This compound used in the same concentration as borax yields an excellent ointment that retains water more efficiently than the ointment made with borax. It appears to be a typical water-in-oil emulsion. Besides it is practically neutral, whereas Table III indicates that the ointments made with alkaline substances retain a considerable degree of their alkalinity depending upon the proportion of the fatty substances saponified.

In the preparation of the ointment magnesium oleate is dissolved in the fatty substances and the product is prepared in the usual manner.

SUMMARY.

1. In the preparation of Ointment of Rose Water, the reduction of the surface tension of the aqueous fluid is not an essential criterion in the formation of the emulsion.

2. Salts producing a hydroxyl-ion concentration represented by p_H 9.17 or greater, as well as free alkalies in sufficient concentration, produce a satisfactory ointment.

3. Magnesium Oleate produces a neutral, stable, water-in-oil emulsion of Rose Water and owing to its compatibility with medicaments in general the authors recommend its use in the official Ointment of Rose Water.

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A STUDY OF ROSE WATER OINTMENT.*

BY C. O. LEE AND H. G. DEKAY.

Bulletin 26 (1), of the Sub-Committee on Cerates, Ointments and Miscellaneous Galenicals, is a report on ointments. In it Chairman L. A. Seltzer has the following to say about official Ointment of Rose Water:

> The U. S. P. X ointment is so definitely subject to rancidity as to make the improvement of that formula imperative. I have had occasion to discard considerable quantities of the ointment for that reason. The use of liquid petrolatum should be considered.

We believe it is no exaggeration to say that every dispensing pharmacist has had, at some time, the experience of throwing away rancid ointment of rose water.

This preparation has remained basicly the same through every issue of the Pharmacopœia. According to Moore (2), the questionable idea of incorporating rose water is an offspring of our own Pharmacopœia. He further states that the Pharmacopœia of 1830, New York Revision, had the wisdom to leave out the rose water in this formula.

Galen, according to Piesse (3), is given the credit for having invented "that peculiar unguent, a mixture of grease and water, which is now distinguished as cold cream in perfumery, and as Ceratum Galeni in Pharmacy." The modern formula for cold cream is, however, quite a different thing to that given in the works of Galen in point of odor and quality, although substantially the same—"grease and water." If, as is suggested, Galen's Cold Cream was a mixture of grease and water, it takes no stretch of the imagination to believe that it has always been a troublesome preparation and our Pharmacopœia simply inherited a bad formula. If, as Moore (2) implies, the incorporation of rose water is an American idea, then we may admit that the pharmaceutical sins of our forefathers have been visited upon us for several pharmacopœial generations and perhaps it is about time to "clean house."

We are all sure of one thing about Ointment of Rose Water. That is, it is not a satisfactory ointment from the standpoint of keeping qualities and, we, as pharmacists, are looking for a better formula. The present formula has remained practically unchanged for the past four revisions of the Pharmacopœia. This fact should be evidence that it is a thoroughly satisfactory preparation, but it is not. That this preparation is problematical is borne out in a recent vote of Sub-Committee 13 upon several proposed formulas for it. In reporting the vote, Seltzer (4) said:

> With reference to Ointment of Rose Water, the majority favor Formula A, yet since, in Bibbins' opinion, none are satisfactory, and others think some other vegetable oil might be found more satisfactory, the matter will be kept open for further study.

We are presenting, in this paper, a brief study of this preparation. A number of formulas have been prepared. They differ mostly as to the oils or fats used. Vegetable oils were used in about half of the formulas studied. Liquid petrolatum was used to replace the vegetable oils in a number of other formulas. A small number were made with white petrolatum and a mixed base instead of

* Section on Practical Pharmacy and Dispensing, A. PH. A., Toronto meeting, 1932.

a liquid fat. Many lesser variations in the formulas will be seen in the various tables of formulas that follow.

The procedure for making these preparations is essentially the same for all. It is as follows:

> Melt the wax and cetaceum over a water-bath and then add the oil and allow the mixture to reach a temperature of about 65°. Put this fused warm mixture into a mixing bowl. Dissolve the borax in the water and warm the solution to about the same temperature as that of the oil mixture. Pour the aqueous solution into the oil. Emulsify the liquids by means of an egg beater, stirring at medium speed for about 30 seconds. When cool, perfume to suit.

Continued beating or high speed is unnecessary for good emulsification in cold cream formulas of this kind. Some advocate pouring the warm soft ointment into containers, but to us a better plan is to allow the mass to cool first. It has been stated that official cold cream keeps well in tin tubes. We have tubed parts of several batches for later observation.

Table I following shows the original formulas of the official Rose Water Ointment. It will be observed that these have remained essentially unchanged through the eleven issues of the Pharmacopœia.

TABLE I.

	1820.	1830.	1840.	1850.	1860.	1870.	1880.	1890.	1900.	1910.	1920.
Oil of almonds	2 oz.	2 oz.[1]	2 oz.	2 oz.	3½ oz.[2]	3½ oz.[2]	50 pts.	600 cc.	560 Gm.	560 Gm.	560 Gm.
Spermaceti	½ oz.	½ oz.	½ oz.	½ oz.	1 oz.[2]	1 oz.[2]	10 pts.	125 Gm.	125 Gm.	125 Gm.	125 Gm.
White wax	1 dr.	1 dr.	1 dr.	1 dr.	2 dr.	2 dr.	10 pts.	120 Gm.	120 Gm.	120 Gm.	120 Gm.
Rose water	2 oz.	2 oz.	1 oz.	1 oz.	2 oz.	2 oz.	30 pts.	....	....	....	....
Stronger rose water	..	..	..	..	..	..	..	190 cc.	190 Gm.	190 Gm.	190 Gm.
Sodium borate	..	..	..	..	..	..	..	5 Gm.	5 Gm.	5 Gm.	5 Gm.

[1] U. S. P. 1st Revision, Washington Convention.
[2] Troy ounce.

An analysis of the formulas in Table I shows that the important constituents have remained substantially the same in all of them. The variations in proportions of oil, wax and water are about as outlined below.

Pharmacopœia.	Ratio of Oil–Wax–Water.			Pharmacopœia.	Ratio of Oil–Wax–Water.		
1820 and 1830*	1.00	0.31	1.00	1880	1.65	0.67	1.00
1840 and 1850	2.00	0.67	1.00	1890 and 1900	3.20	1.30	1.00
1860 and 1870	1.75	0.62	1.00	1910 and 1920	3.00	1.30	1.00

* 1st Revision, New York Convention not included.

Beginning with the Pharmacopœia of 1890 the ratio of oil and wax to that of water was increased to about twice that of the previous issues. At this time borax was introduced and considerable objection has been made to its use from time to time. In 1900 the amount of oil was reduced to 40 cc. or 6⅔%. There was objection to this reduction.

VEGETABLE OILS IN OINTMENT OF ROSE WATER.

There is a strong feeling that vegetable oils are preferable to mineral oils in this preparation. For purposes of comparison we made a number of cold cream formulas using both vegetable and mineral fats. These are shown in Tables II, III and IV. Comments accompany each table.

Table II is a record of 10 vegetable oil formulas. Numbers 1, 2 and 3 are those recently suggested by Sub-Committee 13 for study. Number 1 is the official formula with very minor changes in composition. Numbers 2, 7 and 8 are too soft. Number 3 is cerate-like. Number 4 is the official ointment. Of the vegetable oils, other than almond oil, we feel that sesame oil makes the best formula. It is odorless and of good texture. Upon standing the cottonseed oil ointment became rancid and sticky. Olive oil imparted an undesirable color and the peanut oil developed a rancid odor to the ointments in which they were used.

TABLE II.

	1.[1] Gm.	2.[2] Gm.	3.[3] Gm.	4. Gm.	5. Gm.	6. Gm.	7. Gm.	8. Gm.	9. Gm.	10. Gm.
Spermaceti	125	80	165	125	80	80	125	125	125	125
White wax	120	70	85	120	70	70	120	120	120	120
Sodium borate	5	...	...	5	...	5	5	5	5	5
Water	190	250	...	...	250	250	...	...	...	...
Oil of rose	0.5	0.5	...	...	0.5	0.5	...	...	...	...
Stronger rose water	...	...	...	190	...	...	190	190	190	190
Glycerin	...	...	110	...	...	...	...	...	...	...
Oil of almonds	560	600	640	560	600	600	...	...	...	...
Cottonseed oil	...	...	...	...	...	...	560	...	...	...
Olive oil	...	...	...	...	...	...	...	560	...	...
Peanut oil	...	...	...	...	...	...	...	...	560	...
Sesame oil	...	...	...	...	...	...	...	...	...	560
Castile soap	...	...	...	...	0.5	...	...	...	...	...

[1] Formula A, Sub-Com. 13, Bull. 26 (1932), 51.
[2] Formula B, Sub-Com. 13, Bull. 26 (1932), 52.
[3] Formula C, Sub-Com. 13, Bull. 26 (1932), 52.

LIQUID PETROLATUM IN OINTMENT OF ROSE WATER.

While a number favor the use of a vegetable oil for this formula, about an equal number favor the use of liquid petrolatum. There are arguments in favor of the use of either oil which we will not present here except to say that there seems to be abundant evidence that liquid petrolatum cold creams are in very wide use. They are favored by manufacturers because of their marked keeping properties; dermatologists are about evenly divided on the use of mineral oil and vegetable oil cold creams; and the laity does not stop to ask the difference. Ointment of Rose Water made with liquid petrolatum has long been favored by many pharmacists, and an ointment of this type was considered in the last revision. It is up again for study.

In Table III are thirteen formulas of Ointment of Rose Water made with liquid petrolatum. Variations in the proportions of the basic constituents are not great. The formulas all made up nicely and have stood up well. For appearance, spreading property and texture, we feel that formula Number 6 is most nearly like that of the present official formula. Formulas 1, 2 and 4 also made very nice looking preparations. Numbers 11 and 12 are those proposed by Fueller and Molyneaux. The latter formula seems to have had wide publicity through the drug journals. It is a good cold cream. Number 7 makes a stiff ointment and Number 8 makes one that is too soft. Numbers 9 and 10 are too much like vanishing creams.

TABLE III.

	1.[1] Gm.	2.[2] Gm	3. Gm.	4. Gm.	5. Gm.	6. Gm.	7. Gm.	8. Gm.	9. Gm.	10. Gm.	11.[3] Gm.	12.[4] Gm.	13. Gm.
White wax	146	250	146	300	200	150	400	200	200	250	100	130	80
Spermaceti	...	...	...	...	100	150	...	...	...	...	...	...	...
Sodium borate	10	5	...	10	10	10	10	10	10	10	10	10	...
Water	281	...	281	210	210	210	153	253	...	...	200	190	...
Oil of rose	0.5	...	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Stronger rose water	...	250	...	...	...	...	...	...	210	210	...	...	...
Liquid petrolatum	563	495	563	480	480	480	435	535	480	480	540	485	540
Soap	...	...	10	...	...	...	...	...	...	...	...	...	...
Stearic acid	...	...	...	...	...	...	...	...	10	5	...	...	...
Paraffin	...	...	...	...	...	...	...	...	...	...	100	125	160
Cacao butter	...	...	...	...	...	...	...	...	...	...	4	...	...

[1] Formula D, Sub-Com. 13, Bull. 26 (1932), 52.
[2] Formula D, Sub-Com. 13, Bull. 31 (1932), 65.
[3] Proposed by Fueller, *Bull. Pharm.*, 21 (1907), 36.
[4] Proposed by Molyneaux, *Ibid.*, 21 (1907), 336.

WHITE PETROLATUM AND A MIXED BASE IN OINTMENT OF ROSE WATER.

A number of writers have proposed the use of white petrolatum as a substitute for the liquid fats commonly used in making Ointment of Rose Water. A number of formulas of this kind are shown in Table IV. Of these Number 3 is the most acceptable. The others are too stiff. The presence of stearic acid in Formulas 4, 5 and 6 seems to improve the texture of the finished product.

Formulas 7, 8 and 9 have a very low wax content and are, therefore, quite soft. Otherwise, they are nice appearing ointments.

TABLE IV.

	1. Gm.	2. Gm.	3. Gm	4. Gm.	5. Gm.	6. Gm.	7. Gm.	8. Gm.	9. Gm.
Spermaceti	...	100	150	...	...	...	...	...	...
White wax	300	200	150	200	250	250	...	...	...
Sodium borate	10	10	10	10	10	10	10	10	10
Water	210	210	...	...	...	...	290	240	190
Oil of rose	0.5	0.5	...	...	...	...	0.5	0.5	0.5
Stronger rose water	...	...	210	210	210	260	...	...	...
White petrolatum	480	480	480	480	480	430	...	...	...
Stearic acid	...	...	...	100	50	50	...	...	...
Mixed base[1]	...	...	...	...	...	...	700	750	800

[1] Mixed base formula: Anhydrous lanolin, 5 Gm. White wax, 5 Gm. White petrolatum, 90 Gm.

Many attempts have been made to stabilize the official formula for Ointment of Rose Water.

Doliber (5) added four drachms of tincture of benzoin to a pound of the cold cream and found that it remained sweet for some time but finally granulated upon the surface. Fairthorne (6) said, "One of the objections to the rose water ointment of the Pharmacopœia is its unstable character." For this reason, he maintained, druggists make their own substitute for it. In 1883 salicylic acid was suggested as a preservative for cold cream. Parisen (7) proposed a formula containing glycerin but no water. Williams (8) claimed that much of the trouble with the preparation was due to the fact that the water and the oils were mixed while too hot.

The efforts of many workers to stabilize the ointment by adding preservatives or making minor changes in the formula or technique of manufacture did not accomplish the desired results. A radical change in the formula was proposed when liquid petrolatum was suggested as a substitute for the oil of almonds in the official formula. Many pharmacists accepted the suggestion favorably, others did not.

Concerning this, Dawson (9) said, "Petrolatum and mineral oils are unsuitable for use in cold cream on account of their unabsorbability." On the other hand, Cooban (10) says, "A cold cream that will not become rancid is made from paraffin oil." In speaking of liquid petrolatum creams, St. James (11) said, "It seems to me that more interest should be paid to creams of this class, for they are truly elegant preparations, and in practice give splendid results." Fueller (12) had the following to say about a liquid cold cream which he used: "It does not become rancid, fall down or change color and is not excessively greasy like some I have seen, nor does it get granular, but remains perfectly smooth."

In summarizing the statements of men concerning revision problems:

Cook (13) quotes Hilton as follows: "Use liquid petrolatum instead of oil of almonds. Liquid petrolatum makes a far superior product, does not become rancid on standing, is more acceptable generally and as usually employed seems to be a better product as it is not as readily absorbed." Further testimony in favor of a liquid petrolatum cold cream is taken from a report of Sub-Committtee 2, U. S. P. X (14). The majority report of the committee of three on Therapeutics was as follows: "If it is practical to make provisions that will effectively prevent the dispensing of any rancid specimen, the old formula would be preferable. If this is not practical, it would be better to change to the petrolatum formula."

This is a running cross section of the controversy that has taken place over the official cold cream. Much more could be said about it.

In giving consideration to the problems which this preparation presents we would do well to remember two things: In the first place, pharmacists, "in the good old days," made it in amounts to suit their immediate needs and as an extemporaneous ointment it is quite satisfactory. In our own time the preparation is left to the manufacturer to make. This necessitates long periods of storage under all sorts of climatic conditions. The pharmacist in turn buys in amounts in excess of his needs and soon finds a deteriorated product on his hands. In the second place, the official cold cream is an emulsion and it is perhaps too much to expect it to remain unchanged over long periods of time.

Finally, as pharmacists, it is not within our province to make decisions upon matters of therapeutics and use of medicinal products, but we should certainly be alert to the challenge of elegance, stability and usefulness of well-known galenicals.

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(4) U. S. P. XI Bulletins, Sub-Committee 13, Bull. 31 (1932), 82.
(5) T. Doliber, PROC. A. PH. A., 15 (1867), 385.
(6) R. J. Fairthorne, *Am. J. Pharm.*, 53 (1881), 565.
(7) G. W. Parisen, *Drug. Circ.*, 34 (1890), 175.
(8) J. P. Williams, *Bull. Pharm.*, 14 (1900), 474.
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(12) H. C. Fueller, *Ibid.*, 21 (1907), 36.
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PURDUE UNIVERSITY SCHOOL OF PHARMACY,
LAFAYETTE, INDIANA.

UNGUENTUM AQUÆ ROSÆ.*

BY J. LEON LASCOFF.

The chairman of Sub-Committee on Cerates and Ointments (of which I am a member) has designated me to prepare a report on Cold Cream, known officially in U. S. P. X as *Unguentum Aquæ Rosæ.*

My own observations on Unguentum Aquæ Rosæ are, that a change in the present formula is desirable, because of its tendency to rancidity and the tendency of borax in the present formula to interact with many substances with which the ointment is combined.

U. S. P. VIII devotes a paragraph to the latter; it reads: "When this Ointment is to be used as a vehicle for metallic salts, the Sodium Borate should be omitted."

Before entering into a discussion as to the merits or faults of the present formula, let us trace the history of this preparation. I find in "LaWall's 4000 Years of Pharmacy" the following:

"The most famous preparation handed down to us by Galen, and referred to in the medieval pharmacopœias as unguentum or ceratum refrigerans, Galeni, is the well-known Cold Cream or rose water ointment."

In "Quincy's Dispensatory," published in 1746, on page 300, I find a formula for *Unguentum Album* as follows:

"Take of oil of roses, 9 ounces; of ceruse, carefully washed in rose water and powdered, 3 ounces; of white wax, 2 ounces; when the wax is melted in the oil, sift in the ceruse, after it hath been well dried from its washing, first in common and then in rose water, so that together they may be made into an ointment, *s. a.*"

In U. S. P. I, published in 1820, on page 247, I find the following formula:

"Take of Oil of almonds	2 fluidounces
Spermaceti	½ ounce
White wax	1 drachm
Rose water	2 fluidounces"

and direction for preparation.

The same formula occurs in U. S. P. II and U. S. P. III. In U. S. P. IV there is a revision to the extent of proportions of the same ingredients.

In U. S. P. VIII, we have for the first time the introduction of Sodium Borate in the formula, with the alleged object of promoting saponification of the oils and waxes. The same reference is made in U. S. P. IX and in U. S. P. X.

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* Section on Practical Pharmacy and Dispensing, A. PH. A., Toronto meeting, 1932.

In the foreign pharmacopœias the variation from our own formula, excepting in B. P., is distinguished by the absence of borax, and the slight modifications in the proportions of the other ingredients used.

The Italian Pharmacopœia 4th edition directs:

"Olio di mandorle dolci	80 parts
Cera bianca	10 parts
Cetina	10 parts."

The German Pharmacopœia 5th and 6th editions, direct:

"Weissen wachs	7 Teilen
Walrat	8 Teilen
Mandelöl	60 Teilen
Wasser	25 Teilen
Rosen öl	0.1 Teilen."

The French Codex directs:

"Cire blanche	100 Gm.
Huile d'amande	400 Gm.
Eau distilée de rose	250 Gm."

Omitting the carmine from their Ceratum Rosatum, I find the use of a paraffin and paraffin oil in substitution for the Almond Oil in the following formula:

"Cire blanche	100 Gm.
Vaseline officinale	100 Gm.
Huile de vaseline	4 Gm.
Essence de rose	gtts XX."

The Russian Pharmacopœia includes Unguentum Leniens:

"White wax	3 parts
Spermaceti	6 parts
Oil of sweet almond	24 parts
Glycerin	4 parts"

In the Danish, Norwegian and Swedish pharmacopœias this preparation is designated "Unguentum Cetacei," with various proportions by weight of spermaceti, white wax, rose water and almond oil. This concludes the history and the various official formulas of "Cold Cream."

Further research among the unofficial sources offers a profusion of formulas for cold cream, that far exceeds the vast number of authorities consulted in this connection. The variations are mainly in the nature of proportions of ingredients used, as compared with the different official domestic and foreign pharmacopœias. Many use several different perfumes.

These can be readily discounted as purely an esthetic or sensuous refinement and, therefore, need not be considered in a work such as this committee is doing.

Others prefer omission of the spermaceti. I find in the "Extra Pharmacopœia" by Martindale and Westcott, Vol. 1, of their 17th Edition, printed in 1920, on page 600, the following comment:

E. W. Lucas finds it best to omit spermaceti from this ointment. His form is:

"White beeswax	18.0
Almond oil	61.0
Borax	1.0
Rose water	20.0
Otto of roses	0.1

B.M.J. ii/13, 1013."

This has been adopted officially.

A number of formulas were found, directing the use of castor oil, cocoa butter, glycerin, lanolin, glyconine, tincture of benzoin or balsam peru. In each one of these instances the above ingredients represented a single departure by merely eliminating one of the ingredients of the various official pharmacopœias.

It becomes quite evident, that these substitutions represent merely individual personal preferences, or have suggested themselves for a specific use in the mind of the originator and, therefore, do not merit the serious consideration of this committee, always bearing in mind the scope of its activity.

I have personally conducted a number of experiments in this connection in my own laboratory. The conditions of these experiments included elimination of one or two ingredients, as indicated in U. S. P. X; several modifications of proportion of ingredients used, preparations made with an entirely new number of ingredients. The results of this experimentation, eliminating the unsuccessful preparations, are a matter of record with the chairman of this Committee.

I will briefly quote a few excerpts from our correspondence and shall then proceed to a résumé of my conclusions reached in this study.

In a report rendered to Dr. Leonard A. Seltzer on Dec. 1, 1931, I submitted four formulas for Unguentum Aquæ Rosæ as follows:

Formula A.		Formula B.	
Spermaceti	125 Gm.	Spermaceti	80 Gm.
White wax	120 Gm.	White wax	70 Gm.
Expressed oil of almond	560 Gm.	Expressed oil of almond	600 Gm.
Sodium borate, in fine powder	5 Gm.	Water	250 Gm.
Water	190 Gm.	Oil of rose	0.5 cc.
Oil of rose	0.5 cc.		
Formula C.		**Formula D.**	
Spermaceti	165 Gm.	Spermaceti	120 Gm.
White wax	85 Gm.	White wax	146 Gm.
Expressed oil of almond	640 Gm.	Liquid petrolatum	533 Gm.
Glycerin	110 Gm.	Water	190 Gm.
		Sodium borate, in fine powder	10 Gm.
		Oil of rose	0.5 cc.

Leonard A. Seltzer, in acknowledging receipt of these four formulas and sample submitted, raised an objection to the use in Formula C of glycerin. The basis of this objection, in which I concur is the sensitiveness of some skins to glycerin.

In Formula D there was a difference in opinion as to the consistency of this sample. To overcome this objection and determine the tendency to rancidity of Formula A, and again injecting into this discussion the desirability of omitting the sodium borate, as indicated in Formula B, this became the nucleus for further study of a suitable formula.

As reported to Dr. Seltzer on December 11th, I find that the substitution of Oil of Rose for Rose Water in Formula A increases the length of time this ointment will keep without becoming rancid.

Concerning Formula B—this would remove the objection of interaction with metallic salts, when cold cream is used as a vehicle.

Increasing the proportion of the spermaceti in Formula D, gives an ointment of a firmer consistency and removes the rancidity objection.

Further experimentation, as evidenced in a report made on December 18th, produced a formula that is in all respects the same as U. S. P. X except the use of Liquid Petrolatum in place of the Expressed Oil of Almond, and Oil of Rose superseding Rose Water. This would remove the complaint of rancidity.

A series of personal consultations with several eminent dermatologists brought out the fact that at times they prefer a cold cream with a mineral oil base, with prescriptions No. 1 and No. 2 as examples taken from our files as follows:

℞ 827,137.

Acid boric	3.0
Unguentum Aquæ Rosæ (Mineralis) *q. s. ad*	100.0

Sig.: Use as cold cream.

℞ 805,127.

Phenol	0.6
Resorcin	0.2
Glycerin	10.0
Cold cream (Daggett & Ramsdell)	50.0

Sig.: Apply night and morning.

The chairman of this Committee advises, in view of the fact that in order to change to a mineral oil base the precedent already established, it would require us to submit the formula to the American Dermatological Association, and further, in view of the previous decision on this question, it might be well to limit our discussions on vegetable oils This, in my opinion, should lead us to the adoption of Formula A.

UNGUENTUM AQUÆ ROSÆ.

Formula (A).

Spermaceti	125 Gm.
White wax	120 Gm.
Expressed oil of almond	560 Gm.
Sodium borate, in fine powder	5 Gm.
Water	190 Gm.
Oil of rose	0.5 cc.

Reduce the spermaceti and the white wax to fine pieces and melt them on a water-bath; add the expressed oil of almond, and stir, continuing the heat until the mixture is uniformly melted. Dissolve the sodium borate in the water, warmed to the temperature of the melted wax and fat, and add the warm solution gradually to the melted mixture, stirring it rapidly and continuously until it congeals and becomes of uniform consistence. *Lastly, incorporate the oil of rose.*

The substitution of Oil of Rose for Rose Water and Distilled Water removes some of its tendency to rancidity and prevents the evaporation of the rose odor.

Referring to my series of consultations with the dermatologists previously mentioned it would be well for us to take an example from the "French Codex" and *also* have a formula for a cold cream with a paraffin oil base, as follows:

Spermaceti	120.0 Gm.
White wax	146.0 Gm.
Liquid petrolatum	533.0 Gm.
Water	190.0 Gm.
Sodium borate, in fine powder	10.0 Gm.
Oil of rose	0.5 cc.

To distinguish it from the vegetable oil cold cream, name it "Unguentum Leniens Petrolati."

ASSESSING COSTS AGAINST THE PRESCRIPTION DEPARTMENT.*

BY WROE ALDERSON.[1]

The research into the costs of distribution undertaken by the Department of Commerce is based on the principle that prices should be set to include costs and a normal profit on every product. Recent months have given many examples of the evils of price competition. These conditions have been as pronounced in the drug trade as in any other. Remedies have been sought in a number of directions and the retail drug trade has been in the forefront of the general movement for price stabilization. Whatever machinery a trade may adopt for banning destructive price policies the necessity for developing a scientific basis for prices will remain. In other words, cost research must always go hand in hand with any great action concerning unfair price practices.

The single purpose of the National Drug Store Survey is to determine how much it costs the retailer to handle each product he sells. Commodities behave differently in the retail store. Some move through the establishment very quickly releasing space and invested funds to be used again. Others lie on the shelves for months at a time and tie up capital investment. Some commodities sell almost automatically since the customer calls for them by name and accepts them without sales talk concerning their qualities or uses. Other commodities appearing upon the market for the first time, being presented to the customer without the benefit of a well-known name, or presenting a wide range of color, style or design for customer selection, require several minutes for each sale.

In the field work of the drug store survey all of these essential differences in the behavior of commodities were measured and the data will be used in arriving at operating costs for each product. These costs may be very readily calculated on all package commodities. The case is somewhat different when it comes to determining the cost of filling the several types of prescriptions filled by the pharmacist. A number of differences appear in this department which are happily absent from the consideration of the cost of merchandising packaged products. Pharmacists, however, have always been conscious of the pricing problem in the prescription department. There has never been a suggested resale price as a convenient guide for use in this department. The very fact that the pharmacist has been forced to do his own pricing in this field has made him do some thinking on the subject.

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* Section on Commercial Interests, A. PH. A., Toronto meeting, 1932.

[1] Director, National Drug Store Survey.

As a result, I think it may be said that prices are already on a more scientific basis in many prescription departments than they are in other departments of the drug store.

Several very sound working rules for determining prescription prices have been worked out by trade associations and others. The National Drug Store Survey will develop another formula of this type. The only special virtue of the survey formula will be that it will be placed on the same basis as price formulas for other departments. It will also have the advantage of actual time studies of prescription-filling operations and calculation of turnover rates for all ingredients used for a group of selected stores in St. Louis. The work of assigning cost to drug store products in each of these stores is now being carried on in the office of the Department of Commerce in Washington. The first step is to make a fair assignment of all the operating costs of the business to the three distinct types of operations carried on, namely, the filling of prescriptions, fountain service and the sale of packaged products. These three departments must be considered as if they were three different enterprises being carried on under the same roof. A fair assignment of space used must be made for these three parts of the store. The relative value of space in front and rear of the store must be taken into account. The degree to which the several departments make use of aisle space must also be considered. Rent and other elements of occupancy, such as light and heat, will be assigned on the basis of the final determination of space used.

The manager and the assistant pharmacist ordinarily divide their time between the prescription department and other phases of the store's business. Their activities have been studied to determine what part of their time is spent in the actual filling of prescriptions and what part in supervising activities "out front." By careful weighing of all of these considerations it is expected that the prescription department can be charged with a fair share of the total operating cost of the business.

The real task begins only after this is done. This task is the fair assignment of the operating costs for the department against various types of prescriptions filled. To begin with, prescriptions must be divided into significant types from the standpoint of the steps required in filling them. Some of the characteristics of prescriptions which determine the length of time required for filling include the number of ingredients, the solubility of ingredients and other technical problems involved in combining ingredients. Prescription-filling time is likely to vary as between powders and liquids, refills and new prescriptions, or prescriptions composed of official or proprietary ingredients. When these classes have been set up the problem of determining the cost of filling each class of prescription is fundamentally a problem of measuring time.

The length of time the pharmacist has had to carry the ingredients must be measured as well as the length of time required in the actual processes of preparation. The first kind of time involves investment and the use of capital facilities; the second kind of time involves the use of the skill and attention of the pharmacist. Investment time is ordinarily expressed in terms of turnover. Turnover in the prescription department is difficult to measure. The formula by which turnover is being measured in the National Drug Store Survey is rather involved. It is based on a very simple process, however. Turnover rates are first determined

for each of the ingredients entering a prescription. The turnover rate for the prescription is a properly weighted average of the turnover rates of the ingredients. By this means is determined a fair basis for assigning to types of prescriptions such cases as rent, light and heat.

The ordinary scheme of assigning these costs as a percentage of sales price is an undue penalty against products which sell rapidly. Costs such as labor will be assigned on the basis of actual measurement of time consumed in the filling of various types of prescriptions. The measures made in St. Louis are being supplemented by measures made elsewhere and also the estimates of experienced pharmacists as to the amount of filling time which various types of prescriptions will require. This will, of course, vary to some extent from one store to another since some pharmacists will develop a superior technique in the production of pills, for example, through filling more than the average number of such prescriptions. It will be possible, however, to establish definite rates for filling all of the commoner types of prescriptions.

After measuring the investment time and the process time on types of prescriptions and assigning costs on this basis, it will be possible to determine relative net profits on such prescriptions as are now being handled. This, of course, involves determining the ingredient cost for each prescription which must also come out of its selling price. It is confidently expected that in the application of these cost and profit figures it will be possible to wipe out inequities which now appear in prescription pricing.

PRACTICAL AND PROFITABLE PHASES OF THE ST. LOUIS DRUG STORE SURVEY.*

BY J. W. SLOCUM.[1]

The success or failure of an investigation or survey is largely dependent upon the practical application of the results obtained.

Fact-finding is the essential element of any survey but unless the tabulated facts are of a positive character and can be applied in the way of remedies, the industry may not be profitably served.

The average business man cannot afford to establish fact-finding departments in the regular conduct of the business in which he is engaged. It is, therefore, important that an industry have some means of joining forces in order that the business may prosper, and all branches of the industry be enabled to secure profitable results.

It may be possible that the ordinary citizen might question the advisability of the Government taking any part in a survey of such an industry as ours but past experiments, similarly conducted have warranted such action.

The Department of Commerce has plenty of problems confronting it, in times such as these, and could find many intricate duties to occupy its attention, without collaboration with any particular industry.

However, a government for the people can only be of successful service by giving explicit attention to the various branches of industry as the occasion de-

* Section on Commercial Interests, A. PH. A., Toronto meeting, 1932.

[1] Secretary of the Iowa Pharmaceutical Association.

mands. When a necessary industry reaches such a magnitude as to serve 120 millions of people with its 57,700 units and do an annual volume of $1,684,000,000 it has ceased to be a minor factor and has been deemed worthy of more than passing notice by the Department of Commerce.

The St. Louis Survey was not conceived by theorists with selfish motives, but was undertaken on the basis of coöperative action between the Department of Commerce and a national committee representing all branches of the drug trade. The coöperation and activity of the Government was assurance that no selfish interests were to be served but, as a neutral agency, would regard impartially the many and varied interests involved.

Naturally, in a survey such as this, it was necessary to secure much confidential data, which many business firms would be reluctant to place in the hands of personal investigators under other circumstances. It was essential, therefore, that the survey be conducted under the supervision of a government agency.

Never in the history of the drug industry has there been such a gathering of intensely earnest business men as was in session at St. Louis last April to hear the results of this fact-finding survey.

The reports gave us the impression that the practical phases of the survey were of paramount importance. Later, developments tended to show that they were so regarded, as one manufacturer asked for an advance quotation on more than 2000 copies for distribution to retailers in whom he was particularly interested.

The Survey, primarily, was for the purpose of bringing about better and more economical drug store operation. We believe it to be one of the most helpful and constructive movements ever attempted in the drug industry and should have the approval and support of all branches of the trade.

As to the practical value of such a survey, we need only to point to the results obtained in a similar survey made of the grocery business—known as the Louisville Survey. It may be enlightening at this juncture to note that where an application was made of the principles developed in the grocery survey, that bankruptcies of independent grocers have been reduced 70 to 75 per cent.

And so it is evident that this was considered a worth-while job, and many are of the opinion that the St. Louis Survey should have even more far-reaching possibilities. Julius Klein says "Our business recovery depends as much as anything else, on efficient merchandising and it is up to distributors to make it a *sell now* campaign, and not wait for their customers to get into a *buy now* frame of mind. The retailer has been obliged to depend on a trial and error method, to find out how he could best attract and hold the sort of clientele he wished to serve."

This is an expensive and wasteful process. The very fact that one important report of the survey deals with the causes of business failures among drug stores, is sufficient to warrant a careful scrutiny of various phases of the survey.

The failure of a drug store concerns far more interests than that of the unfortunate proprietor. Everybody in the community is more or less affected. If, therefore, this study gets down to specific cases and causes of failure, the application of these lessons will doubtless contribute materially toward reducing the vast number of bankruptcies, which has had staggering proportions in recent years.

We boast of a free country and yet we believe it an unfortunate condition,

when there are no restrictions governing the entrance of any one into a business such as ours, in which the requirements provide for professional service. As a result of this condition, incompetency is one of the major causes of business failures.

It follows, then, that a survey such as this would reveal many gross violations of the very fundamentals of successful merchandising. The failure to keep accurate records was an outstanding cause in the group of thirty drug store failures studied.

Too many times the owner of a drug store has a multiplicity of duties, and while in close touch with all the details of the business, he does not feel that accounting records are essential to profitable operation. In the cases under consideration only two ever attempted to prepare statements of profit and loss, or balance sheets from the records they kept. As a result they were not aware of their ultimate failure until it was upon them. The moral to be deduced from these experiences is that any drug store, regardless of its size should know at all times its status, as to whether it is profitable or not. While some may, in a measure succeed, and not keep accurate records, their success would doubtless have been more pronounced had they known what records would have disclosed.

It is essential to know the cost of doing business at all times. Exorbitant overhead can scarcely be overcome by profits obtained through normal increases in volume. The total overhead, shown in the percentages computed to net sales in the bankrupt stores was 38.4% and of the successful stores 29.1%. This difference clearly indicates the reason for failure.

A comparison made of thirty failed stores and forty successful ones revealed that in cost of operation, the failed stores were 10% greater than in the successful ones. With figures no more difficult than these to understand, it certainly should not take an expert to deduce the principle cause of failures. The average rental, for instance, of the failed stores was 10.6% of net sales, while the successful stores averaged only 4.7% of net sales.

In the stores which had failed it was plainly evident that a very limited number failed because of adverse conditions over which they had no control. One of the valuable results to be obtained from the survey is to utilize the knowledge gained from a careful study of the causes of failure so that many who contemplate entering business, may be warned of the dangers and take note of the mistakes made by others.

There are, doubtless, many instances of success attained by individuals who have entered business without any capital whatever, but the lack of adequate capital has contributed to the failure of many, and only because of unlimited credit were they able to open for business at all. The craze to secure volume has led many to extend unwarranted credit, and it was taken for granted that the business would be efficiently managed. They have apparently not taken into consideration the fact that many individuals engage in business who are not fitted by training or experience and who do not have the natural ability to manage a business successfully. In such cases they are doomed to failure at the outset. Of the 30 failed stores which were surveyed the average length of time these stores were in operation was 4.7 years. Their inability to take advantage of trade discounts was one of the large contributing factors. The report shows that 23 of the 30 had never before been business owners. Several of them had been efficient

clerks in the employ of other druggists but when efficiency became necessary in the management of their own business, it was entirely lacking.

The matter of store location was carefully studied and it was found that 10 of the stores had been established in locations where other druggists had failed. It is doubtless true that some men can make a success of a business in a location where others have failed but that can only be done where the potential possibilities of the neighborhood have not been reached by the one, and has been reached by the other.

Men who enter the drug business, in many instances, do not consider the need of the proposed store in that vicinity. The securing of an empty building seems to be about all that is required to induce some men to enter the drug business. The energy and ambition of some real estate broker is frequently the only reason for opening a drug store.

The records of this investigation show that incompetence was a greater cause of failure than competition. In only one case of the thirty studied did competition seem to have any bearing on the failure of the store. Chain store competition in this instance, doubtless, had something to do with the case. Too many drug stores in their immediate business neighborhood was a contributing factor, as two reported they had nine competitors. While it goes without saying that a location with so many competitors is not an ideal one, it is generally conceded that a merchant with ability, who applies himself and who uses improved methods, in the face of new conditions, can succeed with unusual keen competition.

THE PRESCRIPTION DEPARTMENT.

It is not possible in this short paper to dwell upon all of the phases of the St. Louis Survey but certain ones are more important than others. The facts gathered concerning prescriptions, and the relative parts they play in this drug store drama are worthy of attention.

Despite the fact that we, as druggists, are accused of selling everything but drugs, this survey reveals that we actually do sell drugs. We have the proof here to flaunt in the faces of those who wrongfully accuse us. In the statistics given, the survey shows that about one-fifth of the volume of business was directly due to the dispensing of drugs and the filling of prescriptions. Based on another recent and rather exhaustive survey, it was found that the drug stores of the United States fill approximately 165 million prescriptions annually. This would indicate an approximate average in 57,700 stores of 2860 per store, which is considerably more than the casual observer would estimate. In the 13 stores of the St. Louis Survey the average was 15.3 prescriptions per day, of which 3.9 were refills and 11.4 new prescriptions.

The average price charged for all prescriptions was 92 cents, and the average for narcotic prescriptions was somewhat higher or 97 cents. In the dispensing of drugs of non-prescription sales, in one store over a period of 50 days, the average was 36.6 sales per day, and the average value per sale was 27.6 cents. The investigators were of the opinion that customers would frequently buy larger amounts of these items, if the pharmacist would point out or suggest that a saving would be effected thereby.

It was found that drug stores with a smaller sales volume, usually do a larger

prescription volume in proportion to their total sales. Among the new prescriptions filled the average price was 95 cents and for refills it was $1.00. The reason given for this was the tendency of customers to order a larger quantity when obtaining refills. It was found that as the number of prescriptions filled increased, the average price charged also increased.

Fifty-seven per cent of the 24,000 prescriptions studied were priced at from 75 cents to $1.00, clearly showing that this range of price was the usual charge. Eighteen per cent of the prescriptions were priced at from $1.05 to $1.50 and approximately 4 per cent were priced at over $2.00. Of the 24,000 prescriptions only 2.54 per cent were priced at less than 50 cents. Attention was called to the fact that while it is difficult in numbers of cases, to charge more than a nominal sum for a simple prescription that pharmacists frequently lose sight of the fact, that even the filling of a simple prescription, involves professional knowledge and that more consideration should be given to elements of cost in handling, which are practically the same on every prescription transaction.

The matter of pricing prescriptions is of importance because of the bewildering effect it has upon customers. The Survey reports one instance where in one store they charged 60 cents for a prescription consisting of 20 tablets, of a specialty nature, while another store charged 75 cents for 40 of the same tablets. While it may be impossible to devise a schedule of prescription prices, which would be acceptable in all drug stores, this subject needs serious consideration, in order that the profession of pharmacy may not lose the confidence of a discerning public. It is just as serious, as far as the impression on customers is concerned, to underprice a prescription, as to name an exorbitant price. There have been numbers of instances where pharmacists were accused of substituting, because the price charged on a refill was considerably less than the charge made when it was originally filled. In such cases the confidence of the customer is destroyed in one or the other and this is not conducive to the best interests of pharmacy.

The Survey shows that 65% of all prescriptions called for more than one ingredient, and that prescription filling has not become a mere matter of the pouring out of a liquid, or the counting of a given number of pills or tablets. It is a well-known fact that the prescribing habits of physicians have changed somewhat in recent years, and few prescriptions are written calling for a large number of ingredients. As a natural consequence pharmacists are relieved of some of the responsibilities that were formerly theirs in matters of compatibilities and doses. On the other hand the pharmacist finds it essential to become thoroughly conversant with scientific data, involving a knowledge of physiological chemistry.

It was found that the medical profession is not familiar with the metric system, as only 7.67% of the prescriptions studied were written in that system. Because of this fact many pharmacists have failed to equip themselves with metric weights and measures, and inaccuracies have resulted when they have attempted to transpose the metric into the apothecary system.

In the thirteen drug stores studied, it was plainly evident that the pharmacists had not contacted the physicians, and sold them on the idea of prescribing U. S. P. and N. F. preparations. Here, in my estimation, is the greatest field for fruitful effort, that lies open and beckoning to the alert and active pharmacist.

It is for this reason that a coöperative effort has recently been started, by

the pharmaceutical associations of four Northwest states. This plan involves the sending of a letter, and a series of 16 filing cards, to all the members of the State Medical Societies in each of the four States. Each of these filing cards calls specific attention to two or more U. S. P. or N. F. formulas that could readily be prepared by a pharmacist, and some information as to functions and purpose of the preparations. In some instances the card indicates the approximate cost of preparing them. One of these filing cards has, for instance, 3 official bromides, all N. F. preparations. Another had 4 U. S. P. and N. F. Elixirs, used largely in medicines as vehicles. By this method the physician has quick access to valuable information in this set of filing cards and we believe will result in his making practical use of them. About 6000 sets of these cards are going into the hands of physicians and about 3000 sets to drug stores.

No more constructive work can be carried on than activities such as this, and pharmacy seriously needs the impetus that a movement of this kind would develop. A display of U. S. P. and N. F. preparations made at our State Medical Society last Spring revealed the fact that many physicians are interested in knowing more about such formulas and what practical use they can make of them. It is therefor essential that every pharmacist who is alive to his opportunities, should see to it that the physicians of his community be advised of his pharmaceutical skill in making U. S. P. and N. F. preparations.

It was found that in examining the 24,000 prescriptions in the Survey, the usual number of illegible prescriptions were in evidence. In one instance a physician clearly prescribed a disinfectant and the directions read, "As directed." Everything was apparently in order but this careful pharmacist, had made it his habit to ascertain if the customer understood the use of the drug prescribed. Careful questioning revealed the fact that a laxative of a very similar name was intended, of which the patient was to have taken a tablespoonful. The pharmacists' vigilance and tactful precaution had probably saved a life.

The Survey report indicated that in towns of 3000 population or less, at least one-third of the physicians do their own dispensing, while in cities of 12,000 or larger very few of them resort to dispensing and prefer to write prescriptions. In all probability this deduction is inaccurate and conditions will be found to vary in different localities.

Every druggist is and should be vitally interested in the success of his prescription department. Particularly so when it is found that in many cases approximately one-sixth of the total inventory is composed of prescription drugs. There are many other practical phases of the St. Louis Survey which could be mentioned and analyzed with profit, and which heretofore have been more or less obscure, but time will not permit of a discussion of them in this paper. The fact that the Survey revealed that men not only enter our drug stores in greater number than women, but actually account for a larger number of purchases, should mean considerable to druggists throughout the country. And also the fact that not more than one out of eight customers buy more than one item on a single visit to a drug store, should mean considerably more.

A study and analysis of these facts should make us more alert as to the possibilities and achievements to be attained in the profession of pharmacy.

THE NEW URGE OF ADVERTISING.*

BY FAYETTA H. PHILIP.

For the independent retail druggist, especially with just one store, there is an imperative *need* to keep pace with the times for he is very prone to lag behind. He needs an urge. Perhaps for him there is no time to analyze and therefore it is proposed to offer a few examples of some new developments, in a concrete form.

In *modern advertising*, the blocks which are used to build advertisements are fact-finding statements, descriptions of principles and the reasons for usage. To-day we are writing fact-finding advertisements. Producers are telling *facts* about their wares in order to establish values and it is observed that so many manufacturers have been accentuating facts that ordinary buyers are already educated to ask for *facts* about merchandise in order that they may buy wisely.

Once upon a time a soap advertisement might have said, "It floats," but that is not enough for the public to-day, because it does not tell why it floats nor what good floating does.

Another soap advertisement might say "99% pure," but that is insufficient. The ad must tell *why* it is pure and the *reason* purity has a value. Pick up a Sunday paper to-day and you will probably see for yourself—a picture of a particular cake of soap. You will see a life-size test-tube with 3 ounces of olive oil, measured in it, and a statement that just so much olive oil goes into each and every cake of that soap.

In the face of this fact-telling national advertising, will the druggist persist in telling customers, or in writing advertisements for local papers, or in printing labels for Cod Liver Oil for an instance, which extoll only its virtues for making thin people fat? Such is not modern advertising nor is it good sales talk, nor is it convincing to the public. Rather must the vitamin content be established and then explained. That is the kind of urge to put in advertisements. Make people *need* what you have to sell for some reason of health, beauty, style, of *some* thing.

The price-minded public is no longer attracted by the mere figure of 19 cents on an article. Many want to know why it is sold, or why it can be sold for 19 cents. People want to know how they will get even 19 cents worth of value out of it. One store manager advertised that he had been able to buy a whole car-load of goods from a manufacturer at a lower price than any one else. That was his reason for being able to offer the merchandise at such a low price for the genuine article. His reason was sufficient and he sold out.

Facts are building all sorts of new ads, and as the druggist is better educated than any other merchant to know of what his wares are made, let him exploit the *facts* of his merchandise. The least he can do is to follow the lead of national advertisers and use the facts.

WINDOWS ARE ADVERTISING MEDIUMS.

Are druggists decorating their windows to take advantage of the new urge in advertising? Are they meeting competition in window displays? Many do not seem to realize the possibilities that the window affords. Inasmuch as the drug

* Section on Commercial Interests, A. PH. A., Toronto meeting, 1932.

store window is in competition with every other show window on the block, it, therefore, should be made the most attractive.

Windows to be attractive must be up with times, *First*, displays should advertise facts. *Secondly*, the color scheme should be correct. *Thirdly*, the displays ought to be placed in accordance with the modern mode of alignment.

If the *fact* advertised is the price, remember that price appeal cheapens merchandise and beware of that sort of window. Be wise enough to use the window space to display goods which you really want to sell. Goods that have a living profit in them, goods that invite customers into the store for further examination, and goods which will stimulate buying in *your* store.

COLOR IS A KEYNOTE OF THE DAY. IT IS INFLUENCING BUYING OF EVERY COMMODITY.

Does the color of your window display make much difference? It does, fully as much as any other factor. The color of the age is silver. Have you noticed that far and wide the new architecture is using silver for trimmings of buildings? Have you noticed that everywhere gilt and gold are being replaced with aluminum, platinum and chromium? Therefore use, silver in the drug store window decoration, or suggest it. If need be, use white with just a touch of black to set it off. For a hue or color use blue, and for variation use the gradations of blue progressing from the deeper dark shades to the ligher more delicate tints. Do not mix your colors, use only one color in a window, vary *it* by its different shades to give it mass and to hold the display together. White may be used with any color.

After color consideration comes the principle to be used in aligning the window. Lines are not curves and dashes; a going in a straight line as far as possible to a vanishing point. Modern lines in decorating are as pyramids and triangles with all lines moving toward the vanishing point.

Pyramid every display in some way. Forget the old balanced form of one on the right and a like one on the left. That is out of date. Customers sense it as they pass and automatically will move on to a modern, line-pointed window. Pyramid can be made by starting a tower of goods in cartons with 7 packages as a base, then a second row of 5 cartons, then 3 and topping with 1, or it may be done by placing individual packages on triangular cards and in many other ways. Pyramids, effects may be formed with just 3 articles. Place the first and largest article nearest the windowpane, then place a second one midway in the window space and slightly elevate it above the first article and then finally, put a smaller one further back and still higher than the second article. This gives the illusion of perspective.

Large spaces may separate pyramided masses or an entire display may be packs of small pyramids. When numerous small units are used then the entire display of the units must step up as a unit to the apex of a pyramid. Every one feels the substantial base of the triangle and sees that the direction in which it points is upward. So much for the modern form of alignment.

The only real virtue that the crêpe paper backgrounds have is that they really carry out this form. To-day this kind of background is usually a tint of blue, yellow or green. It is very seldom red, brown or orange as these latter colors are obsolete. Those who hold places in decorating for the tobacco firms are up-to-date and the window forms which they use are correct. Do not hesitate to copy

them for drug displays but do not fill your windows with cigarette cartons and look like a cigar or grocery store. Be a *drug store* in the eyes of the world.

Let the eyes of the passing world look into the windows of your drug store, the windows which have been termed the eyes of the store and see the soul of your business portrayed there with modern up-to-date displays, decorations and wares. Let the eyes of passers-by be arrested by drug store windows so compelling in attractiveness that passers-by will become buyers.

Modern windows are especially well lighted. Have the best lighted windows in your particular block and remember that your forerunners, the old-time druggists with their show globes, were the first to put lights in store windows. Light attracts people as well as moths. It is important to have enough light in a store window even in the daytime to keep the glass from acting as a mirror. This happens when the window is dimmer than the light outside on the street. There are ways to overcome this difficulty and any electric light company will give reliable advice on lighting which may be trusted. Get some such utility company to give you points on modern reflectors, spot lights, color screens and filters, and blue daylight globes. This service is usually free, and you do not have to buy from the utility company, in fact, most of them do not sell merchandise. It will profit you to ask advice about your window lighting.

It is easy to have modern windows, if goods are displayed with the right colors, pyramided in line and well lighted. Displays of merchandise are another form of advertising which are made for the customer to both look at and feel of.

Displays on the inside of stores follow the same trend as the windows. It has been found advisable in building interior displays to make them simulate a loose and careless sort of pyramid. Pyramid piles of goods within reach of customers, so that the customer feels at liberty to pick up an article without disturbing the display or making it fall over.

The new urge in advertising from an emotional standpoint is *fear*. No merchant has the chance to capitalize more on this stimulus for buying than has the druggist. All national advertisers are making the consumer afraid *not* to buy—so buy he does—a mouth wash is to be bought, because of the fear of halitosis, presented as the unforgiveable fault; a dental preparation is to be bought because of the fear of the dentist; another preparation is bought because of the fear of athletes foot, etc. Stimulate fear and you will create action. People will find a way to get that which they need and fear. They need to spend first, for protection from that which they fear most. As human ills are more feared than anything else they are an ever-present urge. If ills are latent, to present them and represent them as possibilities is modern.

Advertisements are telling facts about every sort of medicine and urging the public to buy in order that it may prevent something dire which is to be feared.

Follow the trend of the day in your own advertisements. Be modern. Tell facts. Stimulate fear. Sell preventatives for every ill and urge with light, color and line.

The ability to give service and increase the value of your profession in Public Health is a Christmas Joy and a Happy Expectancy for coming years.

NATIONAL PLANT SCIENCE SEMINAR.

MINUTES OF THE MEETING AND CONSTITUTION AND BY-LAWS.

The tenth annual meeting of the Plant Science Seminar was held at the University of Toronto, Toronto, Canada, the week of August 15, 1932. The attendance was the largest in the history of the Seminar, with representatives from eighteen colleges of Pharmacy of the United States and Canada, representatives from the Departments of Agriculture of both countries and a number of visitors. All sessions of the Seminar were held in the new Botany Building of the University of Toronto.

Prof. E. B. Fischer, University of Minnesota, Chairman of the Seminar, Prof. A. B. Lemon, University of Buffalo, and Prof. H. B. Sifton, University of Toronto arranged the program for the 1932 Seminar. Prof. R. B. Thomson, Head of the Department of Botany, University of Toronto, and his Associate, Professor Sifton, directed a number of excellent field trips. The entire staff of the Botany Department of the University accompanied the members of the Seminar on all these trips and much of the success of this year's meeting was due to the fine spirit of coöperation exhibited by Professor Thomson and his associates.

Botanizing trips were made to Kelly Lake, The Holland River Marsh, The Toronto Water Front, Scarborough Heights and Rockwood. Professor Thomson also conducted the members of the Seminar and their friends on tours of inspection through Hart House, the famous student center of the University of Toronto; Toronto Agricultural College; Connaught Biological Farm; a Toronto Paper Mill; the new Botany Building of the University of Toronto and the Banting Institute. At the latter institution members of the Seminar met Dr. Banting, the discoverer of Insulin. Dr. Banting explained the purpose of the institute and described some of the work now in progress. He personally conducted the members through his research laboratories.

Chairman E. B. Fischer presided at the regular sessions of the Seminar, the features of which were the adoption of a new constitution and by-laws; a round table discussion on the "Four-Year Syllabus in Pharmacognosy," led by Prof. B. V. Christensen; a "Symposium on Microscopic Quantitative Analysis," led by Prof. H. W. Youngken, assisted by Professors Christensen and Fischer. Practical demonstrations of Microscopic Quantitative Analysis were conducted by a number of the members in the Microscopical Laboratory of the Botany Department. The following excellent papers were also presented at the session: "Coptis Occidentalis," by Dean Chas. E. F. Mollett; "Studies on Commercial Psyllium Seed," by H. W. Youngken; "Poison Ivy," by W. J. Stoneback; "A Preliminary Report on the Therapeutic Action of Pyrularia Oleifera and the Laxative Properties of Rhamnus Alnifolia," by L. K. Darbaker. The features of the evening sessions were: "A Historical Report of Activities of the Plant Science Seminar," by Prof. O. P. M-Canis, secretary of the Seminar; "An Illustrated Lecture of the Paper Pulp Industry," by T. Linsay Crossley, of the University of Toronto; an illustrated lecture "A Trip to Egypt in Search of a New Drug (Ammi Visnaga)," by F. A. Upsher Smith. A very enjoyable evening was spent viewing the motion pictures of Prof. L. K. Darbaker, who has a valuable collection of pictures showing the activities of the members at the various Seminars during the last several years.

The Mint Symposium Program was directed by Prof. F. J. Bacon. A portion of the program was devoted to the presentation of a paper on "Chrysanthemum Balsamita," by Prof. E. B. Fischer. Professor Bacon described and by means of lantern slides illustrated the work now conducted in the drug garden of the Western Reserve University, School of Pharmacy. Professor Bacon was again elected to direct the work of the symposium for 1933.

The officers elected for the 1933 seminar follow: *Chairman*, W. B. Day; *Vice-Chairman*, Frank H. Eby; *Secretary-Treasurer*, O. P. M-Canis; *Executive Committee*, C. E. F. Mollett and E. B. Fischer.

Members and guests who attended the Seminar in Toronto follow: F. J. Bacon, Western Reserve University; Mrs. F. J. Bacon; L. B. Barrett, Connecticut College of Pharmacy; Mrs. L. B. Barrett; E. C. Beck, University of Toronto; Mrs. E. C. Beck; Ralph Bienfang, University of Oklahoma; O. P. M-Canis, Rutgers University; P. D. Carpenter, University of Illinois; B. V. Christensen, University of Florida; Mrs. B. V. Christensen; T. Lindsey Crossley, University of Toronto; L. K. Darbaker, Pittsburgh College of Pharmacy; Mrs. L. K. Darbaker; W. B. Day, University of Illinois; Mrs. W. B. Day; G. H. Duff, University of Toronto; Mrs. G. H.

Duff; Frank H. Eby, Temple University; Mrs. Frank H. Eby; W. W. Eggleston, U. S. Bureau of Plant Industry; E. B. Fischer, University of Minnesota; E. N. Gathercoal, University of Illinois; Mrs. E. N. Gathercoal; L. D. Havenhill; E. J. Ireland, University of Wisconsin; Miss V. I. Jones, Department of Agriculture, Ottawa; A. B. Lemon, University of Buffalo; A. J. V. Lehmann, University of Toronto; Mrs. A. J. V. Lehmann; A. W. Matthews, University of Alberta; Mrs. A. W. Matthews; Miss M. V. McCulloch, Department of Agriculture, Ottawa; C. E. F. Mollett, University of Montana; A. J. Schwarz, University of Tennessee; H. B. Sifton, University of Toronto; Mrs. H. B. Sifton; W. J. Stoneback, Philadelphia College of Pharmacy and Science; T. M. C. Taylor, University of Toronto; R. B. Thomson, University of Toronto; Mrs. R. B. Thomson; H. W. Youngken, Massachusetts College of Pharmacy.

FRANK H. EBY, A. J. SCHWARZ
CHAS. E. MOLLETT, *Chairman.*

(Chairman's Address to be printed—also Constitution and By-Laws.)

NEVADA PHARMACEUTICAL ASSOCIATION ORGANIZED.

Nevada has completed the circle of State pharmaceutical associations; its organization meeting was held November 14th and 15th at Reno, under the direction of John Culley, of San Francisco, who delivered the principal address. The officers of the association are: *President,* Clarence Hale, Reno; *First Vice-President,* W. E. Ferron, Las Vegas; *Second Vice-President,* Frank F. Schwartz, Ely; *Secretary-Treasurer,* Lester J. Hilp, Reno; *Board of Directors:* Joseph Wilson, Winnemucca; W. P. Stevenson, Winnemucca; E. B. Loring, Fallon; Ray Fleming, Sparks.

John Culley and President W. Bruce Philip, A. PH. A., were elected first *honorary members;* the former was also given a rising vote of thanks for his assistance in the organization, and a resolution of same effect was also adopted; his address was ordered printed and distributed to Nevada druggists. The association went on record endorsing the work of the National Association of Retail Druggists, and of the AMERICAN PHARMACEUTICAL ASSOCIATION and the code of ethics of the latter was adopted in substance. Endorsement was given to a 4-year course for graduation in pharmacy. A Public Health and Welfare Committee, representing every county in the state was appointed, as follows: H. M. Skeels, Reno; L. J. Hilp, Reno; Glen D. Kennedy, Las Vegas; E. B. Loring, Fallon; E. L. Peterson, Yerington; W. E. Ferron, Las Vegas; W. R. Englert, Elko; F. F. Schwartz, Ely; John Wilson, Winnemucca; E. Jeremiassen, Lovelock; Mrs. F. A. Todd, Gardnerville; William Saxton, Reno; Sterling Coldren, Tonopah; J. M. Gries, Battle Mountain; Mr. Burt, Caliente; Mr. Coryell, Virginia City, and Ray Fleming, Sparks.

The organization meeting was attended by an enthusiastic group and the charter membership carried about forty names, though there are less than fifty stores in the state. One feature of this meeting was that a part of the affair was broadcast, thus the citizens of the state were let in on the fact that their pharmacists were organizing. John Culley, Prof. N. E. Wilson, of Reno, and Walter Terry, Jr., San Francisco, each took his turn at the "mike" in this broadcasting feature.

Two banquets constituted part of the entertainment program. Las Vegas was selected as the convention city for 1933.

The *Journal de Pharmacie et de Chemie* for October is "memorial number," commemorating the life and work of the late Dr. Leon Grimbert, who died September 25th, aged 72 years. He was an outstanding member of the Commission for the revision of the French Codex. While an active worker in all branches of chemistry and in pharmacy, during more recent years he contributed largely to bacteriological and biological research. Although the deceased has been in poor health for a number of years, he continued in his studies until his enfeebled condition compelled him to discontinue.

The *Journal de Pharmacie et de Chemie* discusses the work of Dr. Grimbert divisionally and concludes with a chronological record of his studies year by year from 1886, and a briefer list of contributions to publications. The list of titles requires nine pages and, taking the character of the work and of this scientist into consideration, speaks for a record seldom surpassed.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

"I suppose every teacher of analytical chemistry has his own ideas of the content of applied quantitative analysis or drug assay. Since the title of most courses is 'Drug Assay,' naturally the material must be taken from the practical everyday analysis necessary to meet the requirements of the Pure Food and Drugs Act. Some colleges prefer to make this course a part of quantitative analysis, others prefer to give a fundamental course in quantitative analysis followed by one in drug assay. Regardless of which method is pursued, the following paper by Russell L. Taylor will be interesting and instructive to all teachers of such a course."—C. B. JORDAN, *Editor*.

A COURSE IN DRUG ASSAY TO MEET COMMERCIAL REQUIREMENTS.

BY RUSSELL L. TAYLOR.*

I use the term "commercial" to apply to forms of employment requiring pharmaceutical knowledge and skill, without involving the practice of pharmacy as a profession.

The federal, state and city governments, in their various laboratories, need men and women trained in the methods and technic of drug assay. Large companies manufacturing pharmaceutical products require men of like training in their control laboratories and other positions of responsibility. Private laboratories open another door of opportunity to the graduate who has the requisite knowledge and skill to undertake such work. If the pharmacy school does not train men to fill these positions, the chemistry department will do so, and I think you will agree that such training comes more naturally into the province of pharmacy than of chemistry. I believe that it is to the advantage of Pharmacy, as a profession, to have such positions filled by men who have its interests at heart, and who, both by inclination and education, are sympathetic with its problems and its ethical standards.

When we train our student to fill such positions, we increase his opportunities for employment, which is no mean advantage in these times. In addition, for the graduate who prefers the comparative tranquillity of a laboratory to the keen competition of retail merchandising, we provide an avenue of congenial occupation.

In planning the course in Drug Assay offered at the State College of Washington, I have reviewed carefully my own experience, both in a government laboratory and in the control laboratory of a large company, and have tried to incorporate the essential facts which a beginner will be expected to know and the methods in which he will be expected to be proficient when he enters a position in either of these fields. It must be realized that each laboratory has its own special system and requirements for an analyst, and while it is impossible to prepare the student for every specific routine in every laboratory, we can and must see that he is trained in the methods, technic and mental attitude that will enable him to adapt himself quickly to the requirements of any particular situation.

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* Instructor in Pharmacy, State College of Washington, Pullman—before Teachers' Conference, Toronto, 1932.

The time required for this course as given at the State College of Washington is three semester hours, divided into one lecture and six hours of laboratory work each week. It must be given either during the junior or senior year, so that the chemistry requirements will have been fulfilled, and it is included in our senior schedule as a required course.

The student is impressed, first of all, with the importance of absolute neatness in the laboratory. Spilled drugs or chemicals must be wiped up immediately, and desks and equipment left clean at the end of the period. Each member of the class is required to keep a note-book and report his work in specified forms outlined under each preparation to be assayed. Emphasis is laid upon the development of technic, not merely doing the work, but doing it in the best way. The student is expected to learn the theories and procedures and know the reason for every step in the method before beginning any assay. This not only saves his time at the moment, but the habit is very valuable. He is supplied with a syllabus of all laboratory work, and this must be studied in advance of the laboratory period.

The lectures include explanations of methods used in the assay of laboratory samples and other special methods, theory of distribution constant, use of proper indicators, explanation of calculations in all methods, and similar material. Problems are assigned at each period to be solved outside of class. These are based on correction factors, adjusting of fluidextracts and tinctures for alcohol and alkaloid content, calculating conversion factors, and so on. Discussion designed to lead the student to do original thinking in regard to new methods is encouraged and stimulated.

Very few manufacturing houses make only official preparations, and government analysts must work on many unofficial ones, so our course includes both types. The first work done is the making of standard solutions, including $N/10$ succinnic acid by weight, $N/10$ KOH, $N/10$ H_2SO_4 and $N/50$ KOH.

The following unknowns are assayed by each student:

1. Fluidextract of belladonna leaves for total alkaloids.
2. Tincture of Nux Vomica for alcohol content and total alkaloids.
3. Tincture of Cinchona for alcohol and total alkaloids.
4. Extract of Nux Vomica for total alkaloids.
5. Pilular extract of stramonium for total alkaloids.
6. Powdered stramonium for total alkaloids.
7. Cinchona bark for total alkaloids.
8. A powder for per cent of quinine, both gravimetric and volumetric methods.
9. Tablets of strychnine sulphate for per cent of strychnine sulphate.
10. Coated pills of quinine sulphate for per cent of quinine sulphate, both gravimetric and volumetric methods.
11. Insoluble powder containing a volatile oil for the per cent of volatile oil.
12. Cough syrup for the amount of chloroform.
13. Tobacco for the per cent of nicotine.
14. Headache powder for the per cent of caffeine and acetanilid.
15. A special unknown.

It will be noticed that the first half of the course deals with official preparations and the last half with unofficial ones.

The first unofficial preparation is a powder to be assayed for the per cent of quinine. This is first determined gravimetrically and then the same residue is

titrated, using brom-cresol purple as indicator. This sample gives the student a comparison between gravimetric and volumetric methods.

The second unofficial preparation is compressed tablets of strychnine sulphate. This is assayed not so much for the practice in assaying, as for the calculation of the conversion factor, to give the student practice in determining strychnine and calculating the sulphate, also for the experience in reporting uniformity of thickness, disintegration time, etc.

The third is coated pills of quinine sulphate for the per cent of quinine sulphate. This is determined first gravimetrically and then volumetrically. This sample again gives the student valuable practice in calculating factors. For example, the sample is weighed as anhydrous quinine and calculated as quinine sulphate, U. S. P., with seven molecules of water. It is titrated as quinine and calculated as quinine sulphate. This preparation also gives practice in taking the sample by the aliquot part method. The pills are first dissolved in a liter of water and an aliquot part is then removed for the determination.

The fourth unofficial sample is an insoluble powder containing a volatile oil, for the determination of the per cent of volatile oil. For this purpose, unknowns are prepared containing talcum powder and any ether-soluble volatile oil. This sample is weighed into a Soxhlet thimble and the oil extracted with ether, the thimble weighed after drying, and the per cent of volatile oil calculated by difference. This sample gives the student experience with the continuous extractor.

The fifth unofficial sample is a cough syryp containing chloroform for the determination of chloroform. The chloroform is converted to sodium chloride and titrated as such with $N/10$ silver nitrate. Here the student gains more experience in making standard solutions and begins to realize that the knowledge of a great variety of methods is necessary for this work.

The sixth unofficial preparation is the assay of tobacco for the nicotine content. This gives the student practice with the determination of a volatile alkaloid.

The seventh sample is a headache powder which is assayed for the per cent of caffeine and acetanilid. This method was worked out by the American Association of Official Agricultural Chemists and gives the student considerable experience in technic of separation.

The Tincture of Nux Vomica and the Tincture of cinchona are each assayed for the alcohol content, by determining the specific gravity of the distilled sample and also by determining the index of refraction of the distillate with the immersion refractometer.

A good deal of attention is paid to reporting all samples, especially pills and tablets, where there are many things to consider besides the assay. For example, the report on compressed tablets includes the general appearance, fracture, surfaces, uniformity of thickness and diameter, measured with the screw micrometer, time of disintegration and weight. The report on coated pills and tablets includes uniformity of shape, kind of coating, polish, coating disintegration time and uniformity of weight.

The Season's Greetings with wishes for a Merry Christmas and a more prosperous New Year.

CONFERENCE OF PHARMACEUTICAL LAW ENFORCEMENT OFFICIALS

ABSTRACT OF THE MINUTES OF THE MEETING HELD IN TORONTO, CANADA, AUGUST 25 AND 26, 1932.

The fourth annual meeting of the Conference of Pharmaceutical Law Enforcement Officials was convened by Chairman R. L. Swain, at 9:30 A.M., August 25th. Those present were: Thomas Marns, Great Britain; Col. C. H. L. Sharman and Herbert Skinner, Ottawa, Canada; A. L. Tennyson and H. T. Nugent, Washington, D. C.; Messrs. Walton, Cook, Munch and Sturgeon of Pennsylvania; Winne and Rudd, Virginia; Judisch and Mead, Iowa; Wilson, Georgia; Gayle and Wilhelmi, Kentucky; Edwards, Illinois; Lehman, Mather, Shaeffer, New York; Kradwell and Ruenzel, Wisconsin; Costello, North Dakota; King, Kansas; Parker, Arkansas; Pierce, New Hampshire; Ray, Texas; Fischelis, New Jersey; Swain, Maryland, and Ford, Ohio.

In calling the meeting to order, Chairman Swain introduced the Canadian Officials and then delivered his chairman's address. Upon motion, duly seconded, his address was received for publication.

THE PRINCIPLES OF LAW ENFORCEMENT.

BY ROBERT L. SWAIN, *Chairman*.

The Conference of Pharmaceutical Law Enforcement Officials was established four years ago in an effort to meet a well-recognized need in our complex modern life. The Conference really owes its existence to the AMERICAN PHARMACEUTICAL ASSOCIATION. In keeping with the sanely progressive spirit which has characterized and distinguished the AMERICAN PHARMACEUTICAL ASSOCIATION throughout the eighty years of its existence, there grew up in it the conception that the stability of the profession and the best interests of the public demanded a more adequate observance of the laws under which the public seeks to be provided with a responsible and efficient personal professional service. This view was held by many thoughtful observers who sought to stimulate pharmacists to a realization of the relationship between pharmacy and public welfare, with the view of encouraging a sense of personal pride and personal responsibility in all phases of pharmaceutical work. It was felt that a more generally accepted legal responsibility on the part of pharmacy would engender a more responsive personal responsibility. From this sense of personal responsibility, it was confidently believed, would come a professional service thoroughly alive to the significance of drugs and medicines to community welfare. In other words, it was felt that law observance, based upon a real appreciation of intrinsic values, and brought about through an acceptance of personal responsibility, would effectuate the purpose of the pharmacy laws, and stimulate the consciousness and morale of pharmacy from which would follow material and professional gains. The Conference of Pharmaceutical Law Enforcement Officials was thus designed to enable pharmacy to express itself more in keeping with its social importance.

In fulfilment of its purpose, the Conference necessarily becomes faced with many problems. Law enforcement, while an exceedingly practical thing, is one of great difficulty. It must take into consideration many elementary phases of human nature. Not only must it oppose the dishonest and deceptive efforts of the few, but it must be carried on in conformity with the views of the many. While it must be forceful and effective, its force and effectiveness must not contravene conventional social standards. While it must ever be devoted to its objective, its objective may not be too obscure or too far removed from presently accepted views of what society needs. In other words, law enforcement is largely a relative term, the definite and precise results of which are to be determined through consideration of many social, political and economic principles.

A careful analysis of these functions will show that the pharmacy law enforcement official must be, to no small degree, an expert in the laws which he seeks to enforce. Whether he styles himself such an expert does not matter. Practical experience has shown that the duly authorized officers of the law will rely upon the judgment, and frequently the interpretation, of the person actually engaged in applying these laws. This comes from a recognition that the pharmacy laws are more or less technical, and include many matters and transactions with which public authority deals infrequently. In considering such laws, it is the natural and logical thing to rely upon the views of those who must be presumed to be well versed in them. When seen from such a point of

view, the enforcement official becomes a many sided character, and one faced with a profoundly insistent responsibility. It is because of the unique position in which the enforcement official finds himself that he must be familiar with many things not always associated with him in the public mind. To work out a satisfactory and workable technique, he must first of all adopt a sound policy, and this, it is obvious, calls for the exercise of a well-considered judgment as to the objective of his efforts and knowledge of many factors which make the objective attainable. My own view is that a general conception of what law is, how it has been developed, legislative procedure, how the law is interpreted, the processes and courts available are essential to the proper discharge of the law-enforcing function. With this foundation firmly laid, the details of enforcement technique and the machinery required are worked out with comparative ease.

As the work of the Conference of Pharmaceutical Law Enforcement Officials has to do primarily with the application of laws, it follows that the work must be based upon a sound understanding of what law is, and that the object of the work is a realization of the purpose which the law is designed to serve. Admitting again that law enforcement is a rather practical thing, nevertheless the practical methods lose nothing of value by having been developed from a knowledge of the principles from which the law springs. In fact, the converse seems to be especially true. If the methods by which the law is sought to be applied have been worked out with no regard to fundamental legal concepts, the result must be failure. To be practical one must be familiar with the theoretical background from which practical results become possible.

In pursuance of this line of thought, it may be well, first of all, to define law and to show its relation to society. Quoting from a well-known treatise, "Law, in its widest sense, is a rule of action, prescribed by a superior and which the inferior is bound to obey. Law, in its technical sense, is a rule of civil conduct, prescribed by competent political authority, commanding certain things as necessary to, and forbidding other certain things as inconsistent with, the peace and order of society."

If we are to be content with definitions, it may well be that this statement is as concise, and perhaps as accurate, as any that could be framed. However, if legal and legislative functions are to be understood, if principles are to become vital and living forces, it is necessary to delve below mere words to the cold deep springs of human development. Perhaps Mr. Justice Holmes has done it as well as it can be done when he says that "the life of the law has not been logic; it has been experience." Students of the law early become impressed with its profound meaning. They note that superficial manifestations have effected it not at all. True, excrescences have from time to time engrafted themselves only to slough off because of their inherent lack of nutritive substance. The elements from which legal principles have become elaborated, the precepts which have crystallized into rules of human conduct, the basic philosophy of jurisprudence, all have come from the deepest currents of man's experience. If it were possible to visualize the tremendous scope and confines of the law, if it could be merged into some swift moving panorama, one might be able to see, and perhaps to grasp, the deep significance of social forces.

Law is no more, and reflection will show that it can be no more, than an expression of the well thought out and mature conclusions of society. It is a crystallization, into molds and processes of varying degrees of definiteness, of the forces which society has evolved to meet its needs. From the very beginning of things, society has been compelled to fight first for its existence, and later for its supremacy. Law is thus society's means of maintaining stability on the one hand, and providing for change through orderly experimentation with social forces on the other. The law has indeed been born of experience; it is the supreme contribution of one age to another, the final value of which is expressed in the terms of present-day civilization.

Society has always been acutely interested in its own welfare and development. As conditions developed to the importance of affecting rules of conduct, these rules of conduct found a place in the law. As the rules of conduct became inconsistent with a changing social order, the reasons for the rules having changed the rules changed with them. In other words, the law which society has imposed upon itself carries with it always the inherent excellences of ancient days together with newer principles which are emerging to meet the present. The "ever-lengthening past" makes an unending contribution to the present, and contains within itself the most assuring prophecy of the future. Society, rich in experience and with a wisdom grounded deep in fundamentals, rises to meet effectively the problems which come with the ever-changing level in social and political advance.

It is in these thoughts that the legal basis for that wide body of public health laws is to be found. While these laws may be explained as the proper application of the police power of the state, they become of greater significance when seen as the logical impact of social forces. As civilization became more complex and involved, as the safety of the state was seen in terms of individual safety, as scientific development assumed a significance which it had not previously enjoyed, laws of peculiar import were enacted for the protection and security of the public. Laws regulating the practice of medicine and pharmacy have been on the statute books so long that they are accepted with little thought to the basis upon which they rest. Back of them and underlying them always is the purpose to serve the public welfare. This idea is well expressed by the Supreme Court of Minnesota when it said that the manifest purpose of the pharmacy law "was to protect the public against the mistakes and ignorance of incompetent and unskilled persons in the preparation and sale of drugs and medicines." The same principle, modified of course to meet the other situations, underlies the medical practice acts, pure food and drugs act, poison laws, narcotic laws, and other public health rules and regulations. All of this body of rules is designed to serve a public purpose, and that is to protect the public against the mistakes, cupidity and ignorance of the incompetent and unskilled.

Law enforcement thus becomes an activity in which the public is very definitely concerned. Law enforcement is an attempt, carried on in the name of the public, to surround the public with that protection which the public has decreed it shall have. There is nothing mysterious, ambiguous, or uncertain about it. It is a most practical thing, and, when seen from its supporting background, it becomes an activity in which the student might well desire to exercise his talents.

Having attempted to sketch the source of law in its wider sense, it follows that the enforcement of law demands familiarity with the legislative machinery which has been set up. The enforcement officer must know local processes and conditions as they influence legislation. Not only should he be conversant with legislative processes, but he should diligently study public thought by which these processes are put in motion. To this familiarity with local legislative forces should be joined a general knowledge of pharmaceutical legislation throughout the country. A decided trend in one state is likely to manifest itself in all states. A study of the results of legislation as they have been worked out elsewhere is a very effective aid in meeting situations at home.

Not only is this proposition true, but the enforcing official should know intimately the history of the legislation he is attempting to apply. He should be able to place the changes in the law according to time, and he should be closely familiar with the defects which made the changes desirable. To one who has studied closely the development of his legal field, who can measure and interpret the forces which have moved in it, comes a broader grasp and a keener intellectual conception so necessary to a well-balanced enforcement policy. To know the constructive tendencies from which the law has developed is to know the best means of confronting destructive and contending forces. Not only should the enforcement official be familiar with the actual statutes and their legislative history, he should be just as conversant with the decisions of the courts in his own state and the courts of other states in which these statutes have been construed. In this body of case law is to be found the principles which control the application of a workable enforcement policy. Here, too, is set out the breadth and limitation of authority, and here, too, is to be found the frame work of a sound legal point of view. The law, as finally laid down by the courts affords the only safe guide through the uncertainty of regulatory work. These decisions should thus be diligently studied by law enforcement officials.

Then again, law enforcement officials should be as well versed in the rules of construction as possible. What the law ultimately is depends, of course, upon what the courts construe the law to be. While it is admitted that the opinion of courts cannot be foretold, a study of the statutes, with a critical regard for the purpose and intent with which they were enacted, will be most helpful in their enforcement prior to actual court action. A knowledge of the rules of construction becomes of special significance when changes in legislation are desirable. The legislation should be carefully drawn with due regard to the interpretations which similar statutes have received. If this caution is observed, the legislation is apt to be effective and valid.

There is a great deal more that could be legitimately said on the subject of law enforcement. However, I have said enough to portray some of its difficulties and to work out the methods by which these difficulties may be met. I inherently and deeply believe there is no other way. True

local conditions may, and frequently do, demand modifications of general rules, but a rule that is fundamentally sound never loses that attribute by being bent to meet local needs. It is because of this principle that a national body such as this can be made of inestimable value. Here gather men of all states engaged in a work having a common objective and dealing with forces of universal application. Here may be worked out general enforcement policies; legislation broadly designed may be studied, leaving the individual states to mold it to meet peculiar local conditions; here a workable technique may be devised. In other words, this Conference, if earnestly entered into and just as earnestly followed, can be made the agency through which pharmacy may advance to uniformly higher standards. I believe that this body, rich in experience and national in outlook, can become a source of inspiration to pharmacists everywhere. If we, ourselves, meet our responsibilities, if we pool our resources, and merge into one scheme of action for our best efforts, this body should be able to stimulate a new conception of professional responsibility which will make itself profoundly felt throughout the field of pharmaceutical legislation.

Mr. Thomas Marns, Chairman of the Committee on Law Enforcement, of the Pharmaceutical Society of Great Britain, was called upon to address the meeting. He gave an outline of how the law is enforced and administered in England and touched on various laws that affect the pharmacists.

"The Pharmaceutical Society of Great Britain was formed in 1841, and received a Royal Charter of Incorporation in 1843. The objects for which the Society was incorporated are set out in the Charter. These are, *first*, the advancement of chemistry and pharmacy; *second*, the promotion of a uniform system of education for those practicing chemistry and pharmacy; *third*, the protection of those carrying on the business of chemists and druggists; and, *fourth*, to provide a benevolent fund. Those, briefly, are the objects of the charter under which we work to this day.

"In 1868, or prior to 1868, there had been some rather alarming poisoning cases in Great Britain, and the powers that be had to evolve something in the way of regulation of the distribution of poisons. During the years that had intervened between 1843 and 1868 the Pharmaceutical Society had made advancement, and Parliament saw in this new society a body which was probably the right and the only body to look after the sale of poisons in our country. So in 1868 an act of Parliament was passed giving the administration of the law relating to pharmacy and poisons to this newly formed pharmaceutical society. Since that day the Pharmaceutical Society has administered the poisons and pharmacy acts of Great Britain officially and without any charge to the state. It has all been done by the Pharmaceutical Society. It has not cost the state one penny, and I might say, in passing, that it has cost the Pharmaceutical Society quite a lot of money. It has cost the Society very much more to administer the Act than it has received in penalties. The Society has been complimented on the way it has administered the Act.

"There is a statutory penalty of £5 for certain breaches of the Pharmacy Acts. That sum of money cannot be altered; it remains at £5 and no court has any power to increase or decrease the amount. The Pharmaceutical Society retains the penalties which it collects. As the law is in England to-day, it is rather out of keeping with the general run of laws.

"The Society has its own inspectors and they go throughout the length and breadth of the country inspecting the shops of both registered pharmacists and other people who are dealing more or less in those things which are usually sold by chemists and druggists. The inspector makes a purchase and gets the necessary information, which is put on a special form and sent in to headquarters. Then the Law Committee, of which I am chairman and have been for the past five years, considers these cases. Each case is considered on its merits.

"In passing, I might say that there are in England, Scotland and Wales about 10,000 chemists' shops and roughly, 22,000 persons on the register. That does not necessarily mean that all those persons are engaged in retail practice. Some of them are in hospitals; some of them, of course, are in schools of pharmacy; some are connected with wholesale houses, working with laboratories, and others are oversea. But there are on the register about 22,000 people, and about 14,000 of them are members of the Society.

"Membership of the Society is not compulsory; it is purely voluntary and entails a subscription of a guinea and a half a year. Membership of the Society carries with it certain privileges, and, as I say, there are, roughly, two-thirds of the registered persons, or persons available for membership, who are members.

"The affairs of the Society are controlled by a Council of 21 members who are elected by the members of the Society throughout the country. Each member of the Council is elected for a period of three years, at the end of which time he is eligible for reëlection if he desires to be re-elected and if the electorate desires to return him. Thus it is quite possible, should the electorate so desire, to change the whole personnel of the Council in three years. That council of 21 members elects its own president, vice-president and treasurer from among its members.

"The work of the Council is distributed among various committees. The Law Committee, with which we are dealing at the present moment consists of 7 members and a chairman. The Law Committee meets every month; so also does the Council and all the other committees. The reports of the inspectors are carefully examined. The Committee then considers each particular case on its merits, and decides whether to recommend the Council to claim a penalty, or whether a warning will suffice. The Committee's report to the Council is then written and this is presented by the chairman. The Council confirms it, and authorizes the Registrar to apply to certain people for £5 penalties. This he does through the Society's solicitor. He notifies the solicitor that so-and-so, in such a town has committed offenses under the Pharmacy Acts by doing so-and-so, and instructs him to apply for payment of £5 penalty.

"If that person pays the penalty that is all there is to it. There is no publicity. No one in the town knows anything about it. He simply sends the £5 to the Society and that sin is washed out. But if for some reason or other he does not do this, then the penalty is recoverable in the ordinary civil court as an ordinary civil debt. Our evidence is submitted to the court, and the judge, if he considers that the offense alleged has been proved by the Society, orders the person to pay the statutory penalty of £5. That, briefly, is how the law is administered.

"I have here, which I propose to pass around, the Registrar's report for 1931. During that period there were 170 cases in which proceedings were authorized. The results of the cases are shown. The Society's inspectors, as I say, call on chemists, chain stores, grocers, herbalists and on any person they believe to be retailing poisonous substances.

"The Pharmacy Acts demand that in every premises where the business of a chemist and druggist is carried on, that is, in every business in which poisons are sold, the business must be managed by a duly qualified, registered pharmacist, whose certificate must be conspicuously displayed in the pharmacy. Part of the work of our inspector is to see that these certificates are displayed.

"I have here the last report of the Law Committee, the report for June, which will give you some idea of how that works out. Under the heading 'Inspection of shops,' the report for England and Wales states 'since the last report 962 shops have been visited.' That is in one month. 'Of these, 611 were chemist shops. The certificates exhibited included, 281 Certificates of Membership, 290 qualifying examination certificates, 36 major diplomas, and 4 registration certificates. The remaining 351 shops visited were shops carried on by unqualified persons. In 22 of these, certain infringements of the Pharmacy Acts were reported, and these were submitted to the Committee for their consideration.' In other words, during the month our inspectors in England and Wales visited 962 shops of which 611 shops were chemist shops and in every case the certificate was exhibited. They also visited 351 shops carried on by unqualified persons and in only 22 of them did they find any infringements.

"The inspectors look for several things. They first of all look for the certificate of the qualified person, which should be exhibited. They endeavor to make a purchase of a poison. They also look for misleading titles, because no one except a registered chemist and druggist is permitted to use the titles 'chemist' or 'druggist' in connection with an open shop. The Pharmaceutical Society has never taken any action against a person using the title of chemist when it was not associated with an open shop, but if a person has a shop and uses the words 'chemist' or 'druggist' either as 'chemist' or 'druggist,' or chemist and druggist, or uses an adjective to modify the word 'chemist,' such as agricultural, or anything like that, a penalty is claimed and must be paid.

"I told you that the owner of a chemist's business must be a registered chemist and druggist. In 1908, Parliament legalized store trading, and corporate bodies were recognized as being entitled to carry on the business of chemists and druggists. To comply with the law the corporate body must have a registered chemist in each shop, and the certificate of that person must be conspicuously exhibited. The corporate body must appoint a 'Superintendent' who must be a registered chemist and his name must be notified to the Registrar of the Society. Any changes

must be notified. The Registrar then enters the name in a register which is set apart for the purpose.

"A chemist is the only person entitled to sell poisons, that is, those substances which are included in the Schedule of Poisons. The schedule is divided into 2 parts. Part 1 contains the more potent poisons that may only be sold if the vendor knows the purchaser, and knows for what purpose the poison is required. In the event of the vendor not knowing the purchaser personally, the purchaser must be introduced by some person who is known to the vendor. Before the sale is made, particulars showing the name and address of the purchaser, the name and quantity of poison sold, and the particular purpose for which the poison is required, must be entered in a special book kept for the purpose and the entry must be signed by the purchaser. Of course, the poison must be correctly labeled with various particulars including the name and address of the vendor."

Robert C. Wilson inquired whether there were special requirements with regard to the labeling.

Mr. Marns replied in the following and continued: "We have a Labeling of Poisons Order, which demands that the name of the poison, and the percentage of the poison present, must be on the label, and that is carried right down even to such things as bay rum and cantharidin toilet preparations. They must specify the amount of cantharidin present, and label it poison—a red label is not necessary.

"Chemists may use certain titles, such as I have explained and, of course, the Society not only looks after the people who are claiming the title of chemist, but it also looks after its own members to ensure that they do not claim titles to which they are not entitled. In other words, a pharmaceutical chemist, that is, a person who has passed the advanced examination, is solely entitled to the title 'pharmaceutical chemist,' and should a chemist and druggist use the title of 'pharmaceutical chemist,' the Society would claim a penalty from him just as it would if an unqualified person claimed the title of 'chemist' or 'druggist.'

"The chemist may also dispense prescriptions written under the National Health Insurance Acts. You are probably familiar with that for I believe that Mr. Linstead has dealt with that subject before. The chemist may also sell certain so-called patent medicines without paying medicine stamp duty. That is a privilege which is fast disappearing at the present moment. The law decreed that chemists and druggists could sell certain of these medicines without a patent medicine stamp. We are expecting legislation at any moment which will probably do away with that privilege. Then the chemist has the monopoly for the retailing of certain poisons. The Schedule, as I told you, is divided into two parts, Part 1, which includes the more potent poisons which require signature, and Part 2, which includes poisons which are not so potent and can be sold without a signature but which require labeling in the ordinary way. Then we have a class of poisonous substances, which includes such things as hydrochloric acid and liquid ammonia. These substances can be sold by any person providing he complies with the regulations with regard to labeling, and so forth.

"Then, also, there are a certain number of people who supply agricultural and horticultural poisons, such as arsenical or nicotine weed killers, and sheep dips. These people are not chemists, but they are licensed by the various local authorities, and they are permitted to sell these poisons, used for agricultural and horticultural purposes, in sealed containers, after seeing that certain regulations as to labeling and signature registration have been carried out. There are not a great number of these people, and they are usually in the country areas.

"All our legislation in England is the result of compromise, and when one goes to Parliament for legislation, all kinds of people with vested interests intervene. It is therefore a case of getting together and seeing how much you can give in order to get what you want, and the Society had to give way to the creation of this class of licensed vendors for purposes of agricultural and horticultural poisons. There are not many of them.

"There is no centralized supervision of the business of chemists and druggists. Practically every act of Parliament which affects a chemist is supervised by a different authority. For instance, the Ministry of Health is responsible for the administration of the National Health Insurance Acts. The Home Office, and the local police force acting under its direction, is responsible for the administration of the Dangerous Drugs Acts. The Privy Council, acting on the advice of the Pharmaceutical Society, decides what substances shall be included in the Schedule of Poisons.

The Board of Customs and Excise regulates dealings in spirituous preparations and administers the Medicine Stamp Act affecting patent medicines. The local authorities administer the Weights and Measures Act and the Food and Drugs Act and, as I told you, the Pharmaceutical Society of Great Britain administers the greater part of the Pharmacy Acts. So you see there is a considerable overlapping of work, and simplification is greatly to be desired.

"Briefly, the provisions of the law for which the Society is responsible are, as I said, that in every shop there shall be a pharmacist whose certificate is exhibited, that unqualified men do not sell poisons, and that persons, both qualified and unqualified, do not use descriptions to which they are not entitled. For instance, 'Pharmaceutical chemist' must not be used by those who have not passed the advanced examination, and a man must not describe himself as a member of the Pharmaceutical Society of Great Britain if he is not a member. He may be a registered chemist and druggist, but if he describes himself as a member, he is committing an offense, and the Council may require the payment of a £5 penalty. Unqualified men may not use titles which are restricted to qualified men.

"As I have said, there are, roughly, 10,000 chemist shops in Great Britain. There are also a great number of herbalists, oil shops, iron mongers, grocers and people like that who sell preparations which may contain poisons. Not only are the sales of these poisons and poisonous preparations kept solely to qualified persons, but also patent medicines containing a very small portion of a poison. For instance, we have quite a number of patent medicines, nationally advertised in England, that contain a very small percentage of a poison, and are therefore within the Pharmacy Acts, and their sale is restricted to chemists and druggists. Quite a number of grocer shops and general shops have patent medicine licenses which enable them to sell patent medicines, but they must confine their activity to patent medicines containing no poisons.

"As I said, the Society has its own inspectors who are women. There are 5 full-time inspectors, and none of them is a pharmacist. Two are engaged in London, one in Scotland, and the others elsewhere. The Society employs women because it has been found that women are particularly suitable for the work. Pharmacists are not employed for two reasons. *First*, their duties do not necessarily involve a knowledge of pharmacy because they do not inspect chemist shops minutely. Their duties are mainly connected with seeing what titles are exhibited, and purchasing poisons as an ordinary member of the public might do. *Second*, as the Pharmaceutical Society is the prosecuting body, it is best that the inspector, when she gives evidence against an unqualified person, should not be a pharmacist and so give the impression that she may be prejudiced against the unqualified man.

"The Society also has a great many part-time inspectors all through the country. These people are usually ex-police officers who are retired and who are familiar with the work they are required to do. They are used for following up previous inspections and for any special work. For instance, when it is found that an offense under the Pharmacy Acts has been committed at a shop and a penalty has been received, that shop is visited very shortly afterwards to see that everything is now as it should be. That is how these part-time inspectors are used.

"The whole question of the pharmacy and poisons laws of our country has recently been under investigation. There are so many laws, going back such a long period that things are in a more or less chaotic state, and it is extremely difficult for any person to be thoroughly acquainted with all the laws that affect pharmacy. There is not the slightest doubt, and the Society has been the first to admit that certain laws which were probably perfectly good laws in 1868 are not desirable to-day, and that there is an urgent need for coördination and simplification of the various laws that affect the business of the chemist and druggist in Great Britain. The government realized this some time ago, and they set up a departmental committee on which were a number of people who were especially qualified for membership. The Committee heard a very great deal of evidence. This evidence was given by practically every person, or body who made any claim to the distribution of poisons or poisonous substances, either for sale by retail, or for use in the arts and crafts. This committee sat, I think, for a period of about 3 years, at the end of which time it published a report. The report was not unanimous. There was a majority report, a minority report and the report of one particular member who couldn't come down on either side, and who sat on the fence and tried to make the best of both worlds. This report was published, and certain recommendations were made. Then a change in government came along last year, the Labour Government was replaced by a new national government which had such special, urgent work to

do, work of national importance, that they had not the time to devote to what is, after all, a very small matter to the general populace. But all that evidence has been pigeon-holed, the report has been published, the recommendations have been noted, and there is no doubt that when Parliament finds itself in possession of the necessary time to consider these recommendations of the departmental committee, the laws controlling the selling and distribution of poisons in our country will be revised and simplified.

"There will probably be a 'Poisons Board' that will consider what substances shall be deemed poisons and what special restrictions shall apply to them.

"The Pharmaceutical Society will be represented on that Board and will continue to administer the poisons and pharmacy acts. From many points this is very desirable, because it will do away once and for all with the great disability under which the Pharmaceutical Society, which is a voluntary body, has been labouring for so many years, and that is the plea of monopoly. Whenever the Society goes to the Privy Council and asks for certain extensions or for certain articles to be added to the Poisons Schedule there is always a tendency for some one to suggest that the Society whose members already have a monopoly is trying to increase that monopoly by getting these things on the list of substances which can only be sold by chemists and druggists."

Mr. Marns thanked the chairman and members and welcomed questions which he would endeavor to answer and referred to Mr. Herbert Skinner as a member of Council for 20 years who would answer questions he could not.

Chairman Swain on behalf of the Conference, thanked Mr. Marns for his illuminating address.

Mr. Marns' address was discussed by G. V. Kradwell, Wisconsin, George Judisch, Iowa, L. L. Walton, Pennsylvania, H. G. Ruenzel, Wisconsin, R. P. Fischelis, New Jersey, E. F. Cook, Pennsylvania, R. C. Wilson, Georgia. It was pointed out that the usual violations of the pharmacy laws in the United States consisted in the compounding and dispensing of physicians' prescriptions by legally incompetent persons, and in leaving a pharmacy in charge of unregistered clerks. It was shown that dispensing by English physicians was dying out. The effect of the insurance system on the practice of pharmacy was referred to. It was pointed out that prescriptions are written on special forms, and that the amount to be paid by the patient for the prescription is passed upon by a pricing department. The discussion brought out that strict supervision is maintained over the qualifications of those owning or operating a pharmacy in England. Ownership is restricted to chemists who have passed the qualifying examination and limited liability companies. Such companies are corporate bodies, and they must keep qualified pharmacists in charge of their stores, a qualified superintendent on the board of directors, and all of this data must be certified to the Pharmaceutical Society. The enforcement procedure was shown to differ materially than is usual in the United States, but this was due to differences in court procedure.

Mr. Herbert Skinner, being called upon, inquired relative to the position of this body, whether it is a statutory body trying to enforce an Act, or a voluntary body.

Chairman Swain replied—purely voluntary, coöperating in working out policies that can be applied in the various states.

Mr. Skinner inquired whether there were pharmaceutical authorities in the respective states, that have statutory power to enforce the law.

Chairman Swain replied that every state has some statutory body, empowered under the laws of that particular state to enforce the pharmacy law. In probably three-quarters of those states, the board of pharmacy of the state is both an examining body, conducting the examination, granting registration, and things of that character, and is also the enforcing body. In some states it is done by what is termed a consolidated enforcement board, and one board, operating under some professional division of the state government controlling the professions, will enforce laws governing the professions, including pharmacy. Under the consolidation system the work is probably not as strenuously pursued, because of the fact that the body is entrusted with so many enforcement activities.

In a limited number of other states, Maryland being one, the examination and all matters doing with the actual registration of pharmacists are in the hands of the Board of Pharmacy but anticipating somewhat the difficulty of enforcement, as so ably presented by Mr. Marns, the actual enforcement of the Pharmacy Law, Poisons Law and Pure Food and Narcotic laws is in charge

of the Board of Health of the state, and those laws are enforced as a part of the public health program. These three divisions differ only in method. They are all aimed at the same objective; every state of the Union has some body legally authorized and empowered to enforce the pharmacy law.

Mr. Skinner said that this brought him to a point referred to by Mr. Marns that a body had been appointed to investigate the whole administration of the law in pharmacy; it has been up for some time, reported, and finally the bill is suspended at the present moment, but it is significant for every one connected with pharmacy that after the full inquiry that committee recommended that certain laws should be enacted, and the administration, inspection, and so forth, still should be in the hands of the Pharmaceutical Society of Great Britain.

He said that the present schedules of poisons are utterly unsatisfactory; they are too limited. He stated that although it seems anomalous that every pharmacy should depend upon the sale of poisons, it is the only statutory thing obtainable. A doctor in England, for instance, is only protected in one feature—his title is protected, as is that of pharmacists; but the only thing about it is that no one but a doctor can sign a death certificate—that is his sole protection and the sole protection pharmacists get apart from the title is the sale and distribution of poisons. He commented that the weakness of the law in Great Britain is lack of control over doctors—a doctor can get rid of as much poison as he likes. But in this inquiry that was brought out, the secretary of state, through the Poisons Board, had quite an easy time getting hold of that end of the stick. He stated that at the present time pharmacists have no control whatever over hospitals. The dispensing department of every hospital in the land is quite outside the Pharmacy Act. That they do comply is because the chiefs are always pharmacists, or at least about 90 out of 100. Yet that inquiry committee actually placed in the hands of the secretary of state, acting through the Poisons Board, has the power to deal with situations like that.

Mr. Skinner concluded by thanking the Chairman and members.

Chairman Swain called on **Colonel C. H. L. Sharman,** Chief of the Division of Narcotic Control, Ottawa Division. He spoke in part as follows, indicating the line of action with regard to narcotics in Canada.

"The matter of public health, as such, is essentially a provincial proposition. All physicians, surgeons, doctors and druggists are examined, licensed and registered by the provinces and the various associations. The physicians and surgeons of the province of Ontario, for instance, have their own inspectors who conduct such work as is deemed necessary. While public health is essentially a provincial matter, the courts have decided that control of narcotics from a federal standpoint is necessary. We, of course, as a nation have many international obligations, particularly the Geneva Convention on the Control of Narcotics, and we have, as Dominion legislation, a very effective narcotic act. I will only touch lightly on the illicit side of it, because I will make my point in reference to it later.

"We consider that the Act possesses three main advantages: *First*, dealing with purely illicit traffic, the deportation of aliens, and the imposition of the lash. As far as I know, we are the only country that does impose the lash, and it is very effective. Our courts are empowered to impose penalties up to seven years in prison, a penalty which is not infrequently imposed. We also deport aliens convicted of violations of the Narcotic Act, irrespective of the time they have been in Canada, if they are not Canadian citizens. In this country, the large majority are Chinese.

"In the enforcement of the Act we find that the use of what we call "writs of assistance" is exceptionally useful. A writ of assistance is a blanket authority to search given by a judge of the Exchequer court to the enforcement officer. Discretion is naturally used with regard to the officers who are given those documents. It is a blanket warrant permitting entrance into any private house in Canada, by day or night. We have had those for some three years now, without having a single cause for complaint.

"With those very effective provisions in our Act we are able to function effectively. Public opinion is behind the enforcement of our Narcotic Act in Canada, and because it is so we, as a matter of policy, figure there is a very wide distinction between getting after a drug trafficker on one hand and imposing a stiff penalty, and labeling the professional man, whether doctor or druggist, as being convicted under that Act. We make a very marked distinction between a man who has an illicit intent and a man whose guilt is occasioned by negligence. We have, in the course of a year, a number of professional cases. This year a doctor has been sent to the penitentiary for

two years and a veterinary surgeon for four years, cases absolutely of illicit traffic, but we have hundreds of cases in which there is merely negligence, druggists who do not keep their narcotic registers up-to-date, or accept telephone orders from doctors. We feel that there should be a distinction between those cases of negligence and the cases of illicit intent.

"I was rather impressed last winter with a report of a meeting of the British Pharmaceutical Association, at which our friends, Mr. Marns and Mr. Skinner, were present. A speaker at this meeting said that surely it is possible to control the illicit traffic without penalizing the chemist for oversight, such as the omission of putting the date on the prescription. Personally I agree with him. Our minimum penalty under the Narcotic Act is $200.00.

"We handle the professional man in this manner, assuming always there is no suspicion of illicit intent. If it is a druggist who has been negligent we point out where his sin of omission occurred, and we request of him that there be no repetition. We write hundreds of such letters. In 70 per cent of the cases we get an immediate reply, usually with a word of thanks. If we receive no reply, we write again in a month, and that letter is a little stiffer. That usually brings results. In about one per cent of the cases we get no reply, and those gentlemen's names are added to what we call the confidential restricted list.

"We have in Canada 108 licensed narcotic wholesalers. Part of their obligation is to do as they are told in so far as the persons to whom they supply are concerned. Every quarter we issue to all the wholesalers a confidential list of the people to whom they cannot supply narcotics. Therefore, from the administrative angle, we find it quite possible to make a clear distinction between a man with an illicit intent and a man who is negligent.

"We have in Canada about 4000 retail drug stores in operation. They are regularly inspected once a year, or more often, and the narcotic registers, which they are supposed to keep. Any drug store that isn't absolutely up-to-date is revisited. The prescriptions on file are checked with the register. They are checked to see that the prescriptions are dated, that they are signed and not initialled, and, as occasionally now happens, whether there are indications that the order was a telephone one, which we do not permit. Any variations from the normal are reported and the system of one, two or three letters is put into operation.

"We found some years ago, particularly in cities where the supply of illicit narcotics was becoming smaller due to incarceration of those who previously were in that business, the attempts to get narcotics from legal sources were very much on the increase. We had complications in addition to the ordinary ones of holdup and forgery. We found that one particular offense which was becoming altogether too common was obtaining narcotics by men representing themselves to be physicians, over the telephone. A man would telephone to the wholesale drug store, saying, 'Dr. Jones speaking. I want an ounce of morphine sent up to my office right away.' The store would dispatch the ounce of morphine by means of a messenger boy. This man would be waiting outside the doctor's office, and when the boy came he would say to him, 'Are you from so-and-so? How much is it?' pay him the money, sign the receipt, and when the lad came back to the wholesaler they would look at the signature, and find it was not that of the doctor it purported to be. So on every narcotic license we issue to our wholesale druggists are the instructions, 'No narcotic is to leave the premises until a properly signed order has been received on the premises and passed on by a responsible officer, failing which the license will be canceled.' We have had two violations since and appropriate action was taken in the courts.

"Thefts of narcotics from drug stores are quite common. Sometimes they run in series. In one city we had 23 in less than three months. It takes time to find out who is suspected of doing it, and still longer to definitely prove that he has done it. Within three months the persons were arrested and sent down for long terms.

"Another condition of our license granted wholesalers is that they cannot supply more than one ounce of any one narcotic in any one month to any professional man without special permission. We find that one ounce is enough for the average professional man, even a retail druggist, but we frequently grant permission for excess quantities upon cause being shown. That is only necessary about 25 times a year. Sometimes a country doctor will run into three or four cancer cases, and it is only a matter of 48 hours to write in and get authority for a larger supply.

"In the last twelve months we have not found it necessary to bring court action against a single druggist. In the year previous we had some cases, but the coöperation we receive from the profession to-day is remarkable. We have 36 registrars in Canada, 4 in each of the 9 provinces,

for doctors, druggists, veterinary surgeons and dentists. We receive monthly reports from them on additions and changes on their lists. As the thousands of narcotic transactions from these 108 wholesalers come into our office monthly, each one is checked as to the eligibility of the person to get the narcotic, and they are charged up against the person concerned. A person may be purchasing from two or three sources. When we get all the sources together we can tell whether such person is getting too much. We frequently investigate persons, who are ordering quantities, not even in excess of one ounce, as to the necessity of their buying it and what they did with it. We have full authority to obtain that information.

"We have also obtained a judgment from our Court of Appeal that the druggist is responsible for the actions of his employees. A certain preparation with a heavy narcotic content was being sold in a certain city, and although the druggists were warned, we knew this was being sold without a prescription; subsequent investigation showed that the warning was not heeded A large number of them were taken into court and charged. In each case the defense was made they didn't know anything about it, that their clerks must have done it. As soon as the court decided that the responsibility rested with the druggist himself the situation very soon cleared up.

"Reference has been made to hospitals. We do not limit a hospital to one ounce a month. Under our definition of a retail druggist we say a retail druggist means a person registered and licensed to carry on business as such, who is carrying on such a business, or is in charge of dispensing in any hospital in the province in which such a person is so licensed. So we have practically as much control over the narcotics used in the hospitals as we have over the narcotics which are bought by a retail druggist and concerning which he reports when called upon, and whose premises, prescriptions and narcotic registers are examined.

"Addiction to narcotics certainly does exist in Canada. We estimate there are 8000 addicts in this country, most of them are what we term criminal addicts, for whom I personally know of no solution; their associations are such that any definite program for cure is a matter certainly of the future. Then there are a number of people who receive narcotics for definite medical conditions and a small residue of people addicted, some of them occupying fairly high positions, concerning whom we take definite action under conditions of great secrecy. We find that when the narcotic has been withdrawn, but not until then, the person is amenable to reason and it is possible to indicate to him what will happen if addiction again prevails.

"If a medical man, for instance, is addicted, he may be put on our restricted list which, although it is confidential as it must be, may affect his professional standing; in fact, his means of livelihood. He has to weigh that against reverting to his addiction. Of 27 cases involving professional men, of practically every profession, 25 have definitely been off narcotics for periods ranging from 2 to 4 years, but we are not making any claim at all until a period of 5 years has gone by without the use of narcotics.

"At the present time paregoric is occasioning us quite a little anxiety. Paregoric is excepted under our law as in other countries, nevertheless, when one retail drug store buys 40 or more gallons, in one month we consider it is about time that somebody stepped in. We have taken certain steps, but we would much prefer to see the retail druggists themselves control the situation, and not compel the Dominion Government to do so.

"We feel that so far as the legal control of narcotics is concerned, we get much farther along the line of control by the coöperation which undoubtedly exists between the Department and the professions concerned. The success of the whole subject of narcotic control is a matter of coöperation.

"Canada has a special treaty with the United States providing for the exchange of information and for the exchange of prisoners, and that is 100 per cent effective. We are in frequent telephonic and telegraphic touch with Washington, and meet with Messrs. Nugent, Tennyson and Anslinger, of the United States Narcotic Service. The same coöperation applies to Great Britain. The chiefs of the three Narcotic Services met last year at Geneva when the international convention for the control of the limitation of the manufacture of narcotic drugs was put through. We frequently exchange information about these gentlemen who make a practice of importing large quantities of illicit narcotics."

"If ever a lesson has been learned by me, it is that no *one* man in the world can make any success of narcotic control. He must put what he knows into the pot and learn from what the others are doing."

A. L. Tennyson, Legal Adviser from the Federal Bureau of Narcotics, Washington, D. C., was called on.

His remarks dealt largely with the State Uniform Narcotic Law. He opened the discussion by presenting the question which had been asked relative to the need of a uniform State narcotic law. He continued his remarks by stating that "unlike our friends in Great Britain and in Canada, the Federal Government is confronted with certain constitutional limitations. I believe that is true in Canada to a certain extent, but you all know that in the United States the police power, generally speaking, remains with the states. The Federal Government has only certain specified powers under our constitution, and it must remain, in so far as police control is concerned, within those specified powers.

"Our principal problem, in so far as narcotics are concerned, is the matter of preventing smuggling. Most of the illicit use of narcotic drugs in the United States has its source of supply in smuggling and, therefore, the first effort must be directed against the prevention of smuggling.

"Secondly, there is the necessity, in so far as the Federal Government is concerned, to control the unlawful interstate traffic in narcotics and, thirdly, the control of what we term the wholesale illicit intrastate traffic in narcotics. We feel that if we perform those three duties we have done just about all that can be expected of the Federal Government.

"We have a limited force of not to exceed 275 agents and inspectors, and naturally with such a comparatively small force as that we can't be expected to police all of the United States with 120,000,000 people.

"The matter of the smaller type of retail drug peddler we feel is one which comes within the cognizance of the several states, with both legislation and enforcement. We also feel that the matter of revocation of licenses of practitioners and pharmacists, in fact, of manufacturers and wholesale dealers, is something which comes more properly within the scope of state control than it does Federal control. We also feel that the matter of treatment of the narcotic drug addict—I speak here of the compulsory treatment of the narcotic drug addict who is possibly curable in the sense that he has no physiological condition aside from drug addiction which would militate against the withdrawal of the drug—is a problem which should be met by the several state, county and municipal governments.

"To this end, therefore, the Conference of Commissioners on Uniform State laws, which is an organization composed of representatives from each state of the United States, meets annually just prior to the meeting of the American Bar Association, and has been formed for the purpose, among others, of considering the drafting of a uniform state narcotic law. Previously this duty was performed, perhaps more or less exclusively with the coöperation of the American Medical Association. I think when the first draft was prepared of this uniform state narcotic law the Federal Narcotic Bureau, at least, didn't see a copy of it. When the second draft was framed the next year we did get a copy of it from Dr. Woodward, of the American Medical Association, who requested criticisms and suggestions, which were made. We didn't see the third draft, if there was one, but the fourth draft, considered last year at the Atlantic City conference, was submitted to the Bureau, and again the Bureau took the opportunity to make quite a number of criticisms and suggestions of this law, based particularly on its own experience in Federal narcotic law enforcement.

"At the time the fourth tentative draft was being considered it came to the knowledge of my chief, the Commissioner of Narcotics, that the pharmacists, drug manufacturers, the wholesale dealers, and perhaps the proprietary association, were considering, or had considered, that they had been overlooked in the matter of preparing this draft of a state law, because apparently they hadn't been consulted about its phraseology. Naturally, being persons who came in daily contact with narcotic drug problems, they felt that they should be consulted on the formation of any law which was going to be submitted to 48 states with recommendation for passage, because they, of course, would have to live under that law and operate under it. So Mr. Anslinger, my commissioner, last year asked Judge Deering, of Maine, who happens to be chairman of the sub-committee of the Conference in charge of this particular piece of legislation, to consult members of all associations and, in fact, all private persons, who might have any interest, or might have any information to contribute with regard to the phraseology of this fifth tentative draft of a uniform state narcotic law.

"I might mention, just in passing, that we consider it very important this year that we

have a final draft of this uniform narcotic law, because the legislatures of something like 40 of the states are going to meet on or after January 1, 1933, and we feel it is a good psychological time, with public interest aroused in the question, to have a final draft of this law presented to the various state legislatures for passage.

"As a result of Mr. Anslinger's contact with Judge Deering, the Judge expressed himself as highly in favor of obtaining the views of all the associations concerned in narcotic drugs, or narcotic traffic, or administration. As a result of this Judge Deering has expressed the intention of calling a preliminary conference, probably the early part of September, for the purpose of having representatives of all the associations present to give their views as to the phraseology of this draft, particularly after a study of the text of the draft as submitted to them.

"Mr. Anslinger appointed a committee in his own office, consisting of myself, another lawyer from the office, and a legal representative of the United States Public Health Service, for the purpose of going over the fifth tentative draft, which was prepared by Dr. Woodward, the medical legal representative of the American Medical Association, and to review it in the light of amending it wherever necessary, for the purpose of considering the interests not only of the American Medical Association and not only from a strictly enforcement standpoint, but also of the drug manufacturer, the drug trade and the pharmaceutical profession.

"That we have endeavored to do in the past month. The committee has only completed its revision of this fifth tentative draft as submitted by Dr. Woodward, and having done it perhaps more or less under pressure and hurriedly, naturally it is probably susceptible to much criticism, but at any rate it seems to be a step forward in arriving at a final draft to be submitted at this preliminary conference, because we believe if we can get the sub-committee to agree on this fifth tentative draft then we will have a much better chance of getting the Conference itself to accept the draft and to have it approved by the American Bar Association, at which time it will be submitted to the several states and may stand a fair chance of enactment into law in, perhaps, the majority of the states.

"If the Chairman and the members of the Conference will bear with me I will endeavor to go over some points in this that I consider perhaps of special interest to the profession of pharmacy.

"In the first place the Act commences, as do many acts of this kind, with a group of definitions. I won't bother to read all of those because Dr. Swain has been furnished with a copy of this fifth tentative draft and will probably make it available to you sometime after your convention. But I think one definition is of concern to you, and that is the one which deals with your own profession, which we have denominated, in accordance with the other drafts, as 'Apothecary.'

"The definition is: 'Apothecary' means a licensed pharmacist or druggist as defined by the laws of this State, or the proprietor of a pharmacy in which a licensed pharmacist or druggist is employed to compound medicines for sale pursuant to prescriptions."

"We have changed that definition given by Dr. Woodward because he stated, 'Apothecary' means a licensed pharmacist or druggist as defined by the laws of this State.

"There are a number of pharmacies where the owner of the pharmacy is not necessarily a pharmacist himself but employs a licensed pharmacist to fill prescriptions. Under the Harrison Law we permit registration of a pharmacy even though the person applying for registration is not himself a pharmacist, provided he is entitled under the laws of the state to engage in the dispensing of narcotic drugs. That means that we can register a corporation under what we term Class 3 of the Harrison Law, our Federal law dealing with narcotic drugs, because a corporation would be entitled to registration if it had a regularly licensed pharmacist in charge. As a matter of fact, that is what the chain stores do.

"We have used the definition for 'Coca leaves'—'includes cocaine and any other compound, manufacture, salt, derivative, mixture or preparation, except derivatives of coca leaves which do not contain cocaine, ecgonine or substances from which cocaine or ecgonine may be synthesized or made.' "

"Section 3 of the Act, which is perhaps the most important provision in the Act, reads 'It shall be unlawful for any person to produce, manufacture, possess, have under his control, sell, prescribe, administer, dispense or compound any habit-forming drug, except as authorized in this Act.'

" 'Habit-forming drugs' mean opium, coca leaves and any salt or derivative, and Cannabis

indica, and may not be sold except as hereinafter authorized in this Act; therefore, it becomes important that in the rest of the Act you provide exceptions for all proper, legitimate medical use for narcotics.

"Incidentally I might state for the benefit of any who perhaps may not know it that it is unlawful to import any manufactured form of narcotic drug into the United States. Nothing may be imported except the crude opium and coca leaves.

"We have provided for the licensing of manufacturers and wholesale dealers. That is something new, and, as I believe one of the gentlemen who preceded me remarked, otherwise you have practically no control, or not much control, over the wholesale dealer. We felt that he ought to be licensed. Any person who has $12, theoretically can deposit his $12 with the Collector of Internal Revenue and, if the state law doesn't prohibit him from engaging in that business, he can register under the Federal law as a wholesale dealer; therefore, if he receives order forms from qualified people, or from persons who stole those order forms, he can fill those order forms, and he can dispense to whomever he pleases, and you can't get him until you ascertain the fact of unlawful sale. We, therefore, feel that manufacturers and wholesale dealers should be registered, and we provide certain qualifications, as to standards of financial responsibility and technical qualifications.

"In another provision of this Act we provide that apothecaries—that means, of course, pharmacists—may in good faith fill narcotic prescriptions. We urged that those words 'in good faith' be placed in there, in order that the pharmacists would not feel, as a circuit court of appeals in the United States decided on one occasion, that a pharmacist might fill any prescription for narcotic drugs that was presented to him regardless of whether he knew, or must have known, from his professional experience that such prescription couldn't possibly be for medical use.

"In the case in which that arose we prosecuted the doctor in St. Louis, and the drug company also, I believe, at the same time. This doctor had been in the penitentiary at least once before for improper narcotic activities, and from the time of his last release from the penitentiary, in a period of about eight months, he issued something like 10,400 narcotic prescriptions, ranging from 10 to 30 grains of morphine each. His practice consisted of nothing but narcotic addicts, and on the day he was arrested for that offense the Federal officers kept his office open for him and arrested 20 addicts. He charged $1 or $1.50 for each prescription, and two drug stores, one in particular, were filling these prescriptions. That druggist consulted counsel when he saw that he was getting a large number of prescriptions from this doctor, and the counsel said, That is all right. You can go ahead and fill those prescriptions because he is a licensed doctor and everything is all right. You need not question the prescriptions. A circuit court of appeals said, in effect, that was right, that that was a correct interpretation of the law.

"We got rather excited about it down in our Bureau, and we endeavored to have the attorney general get that case reviewed by the United States Supreme Court. The attorney general said that, while he didn't agree with the legal basis for the opinion, he thought it was not a proper case to apply for the extraordinary remedy of a writ of certiorari. However, we are glad to say that since that decision was rendered several years ago, there doesn't seem to be any rush on the part of pharmacists to fill large numbers of illicit or improper narcotic prescriptions.

"What we want to do is to put the requirement of good faith on the pharmacist in filling prescriptions. When that was endeavored to be done some years ago with the Harrison Law, to my surprise we received objections before the congressional committee considering the proposed amendment from both the doctors and the druggists. We didn't anticipate any from the doctors, but it seems that the doctors took the position that it was making the pharmacist the censor of his professional practice, and he very strongly objected to that. The pharmacists objected, I believe through Mr. Brockmeyer, on the ground that pharmacists couldn't be expected to know what was going on in the doctor's office several miles away in the matter of prescribing narcotic drugs.

"But that is beside the point. We were not seeking to make the pharmacist the judge of the physician. We were only seeking to make him exercise good faith in the practice of his profession. What I mean to say is if he receives, for instance, over a period of time, several prescriptions written for half-grain morphine tablets, a size not usually prescribed, I believe that should call his attention to the fact that there is something unusual in that case and perhaps he should make inquiry about it. That is all we were asking.

"Pharmacists have done that before, and I have it from a former chief of my office, who happened to himself be a registered pharmacist, that on three or four occasions, during the course of ten years' experience in the filling of prescriptions in Illinois, he had had occasion to call up a physician about a certain prescription that had been presented, and to ask him whether he wanted the prescription filled as written. The prescription called, I believe, for a certain ingredient which would have killed the patient had he filled it as written. The doctor said, 'Oh, no, I will be right down to the office and give you a correct prescription.' I think that goes to show the necessity of some intelligent discretion that all pharmacists should exercise in the matter of filling prescriptions.

"We would, therefore, like to urge good faith in the matter of filling narcotic prescriptions, and that is all this Act purports to do in so far as the pharmacist is concerned in filling narcotic prescriptions. If he exercises good faith and makes some inquiry, perhaps, where inquiry seems to be proper, he will not run into any trouble, I am sure, in so far as the operation of this law is concerned.

"That is the principal point that I wanted to bring home to you gentlemen. I do think it is important. Of course, one prescription, two prescriptions or three prescriptions for narcotic drugs for the same patient may not mean anything providing the amounts are comparatively small, but when you get a case, as we ran into on one occasion, that is not good faith. One of our district supervisors, a big, strong, healthy chap, who I don't believe ever had a sick day in his life, went into a physician's office in Arizona and obtained within the space of a week two prescriptions for one gram each of morphine, and went out and had them filled without question. That is what we mean by stressing the requirement of good faith.

"The matter arose next about the sales by apothecaries in general, of course, always speaking now of apothecaries in the sense of licensed pharmacists for the purposes of this discussion. In Dr. Woodward's draft he provided that apothecaries might sell upon prescription, but I think he overlooked the fact that an apothecary on rare occasions may have to make other sales. The first thing that occurred to us in our experience down there was that quite frequently we have requests from druggists who want to know how they can dispose of their entire stock. They want to go out of business; they want to sell to another retail druggist. What do they have to do in the matter of transferring the narcotic stock, and if they do transfer it do they become liable to a higher tax as a wholesale dealer? Technically, of course, they would. They are selling stamped narcotic packages, and that makes them liable under the Harrison Law for the wholesale tax. We have, however, provided that that does not make them so liable, that if a druggist wants to sell his entire stock to another druggist in a single sale he may do it, or he may return it to the manufacturer or wholesale dealer for credit. He may do it not only under the Harrison Law as he does not, but under this Act. We provide specific authority for him to do that, and also permit him to sell on an official, written order certain aqueous or oleaginous solutions which are required from time to time by specialists, such as nose, ear and throat men, and dentists who wish fresh solutions particularly of cocaine. Formerly it was objected to because they had to send away to a wholesale house, or even to a pharmaceutical manufacturer. Because they have to have this cocaine solution right along and because it is subject to rather rapid decomposition, it frequently was quite a burden upon the busy practitioner to keep himself supplied. He was in the habit, prior to the Harrison Law, of going down to the corner drug store, where the facilities were for making a sterile solution of cocaine, and getting it there.

"Of course, a literal interpretation of the Harrison Law would prevent that, so an exception was made to provide for the selling of these aqueous and oleaginous solutions, providing the narcotic content did not exceed 20 per cent of the completed solution. We found that had been overlooked in Dr. Woodward's draft and, therefore, we inserted a provision permitting the pharmacist to sell upon a written order to a physician, dentist or veterinarian, in quantities not exceeding one ounce at any one time, aqueous or oleaginous solutions of which the content of habit-forming drugs does not exceed a proportion greater than 20 per cent of the complete solution, to be used for medical purposes.

"We thought it was proper to put those two exceptions in, and we knew if it wasn't we would hear from the retail druggist about it.

"Next we come to the question of exempt preparations, paregoric, cordials, drops and numerous cough remedies. Gentlemen, this was a very perplexing provision, as you can well imagine. We tried to frame it in accordance with the Harrison Law, with one exception, how-

ever, and that is one which appears to meet the approval of the American Medical Association; in substance we have included their draft on this point: that is, in the matter of restricting the sale of an exempt preparation, such as paregoric, as follows: 'That no person shall sell or dispense, at retail, to any one person, or for the use of any one person or animal, within any forty-eight consecutive hours, more than one preparation, liniment or ointment included within this section, and then only in a quantity not to exceed two ounces.' In other words, it limits the sale of exempt preparations to two ounces every forty-eight hours. That is the only addition to this law over the Harrison Law.

"In other words, we have made an exception here that the entire act shall not apply to the manufacturing, selling and dispensing, or possessing of any medicinal preparation that contains in one fluidounce, or if a solid or semi-solid preparation, in one avoirdupois ounce, not more than 2 grains of opium, or more than one-quarter grain of morphine, or of any of its salts, or more than 1 grain of codeine or of any of its salts, or more than one-eighth of a grain of heroin or of any of its salts, or more than one-half grain of cannabis or of any of its salts. We put cannabis within the exempt list. Those preparations may be sold subject to the provision I have just mentioned and to two additional provisions, one of which is in line with the Harrison Law, that such preparations are manufactured, sold, prescribed, dispensed or possessed in good faith, as medicines, and not for the purpose of evading the provisions of this Act. That is necessary to guard against improper sale of paregoric and other preparations.

"We had a case come up in our experience down there of a lady who was buying a certain cough remedy, and she bought something like several hundred dollars' worth of it within a period of one or two months in the summertime. It seemed perfectly clear that the lady didn't have use for several hundred dollars' worth of cough remedy for any cough she might have. She was buying it for the morphine content. Therefore, it is necessary to control the sale of exempt preparations, just as Colonel Sharman has very clearly expressed. We try to limit it in this Act, similar to the Harrison Law, to sale for medical purposes, and also provide for the licensing of the manufacturer of these exempt preparations. We don't provide for the licensing of the dealers. We don't do that because I don't think we would get very far with it.

"As you gentlemen probably know, there are numbers of persons who sell paregoric, and exempt preparations, who have no pharmacy training whatsoever, nor do they have any medical training. The argument is advanced that in certain sparsely settled regions of our country there isn't enough trade for pharmacists, that the farmer out there in the great open spaces sometimes has a stomach attack and he requires a dose of paregoric, which the corner grocery store sells. It is only for medical purposes. Personally I don't think that is a good situation, because if a person who doesn't have some scientific training to know the treatment for which paregoric is indicated, such as a physician or pharmacist, sells it, there is apt to be improper use of it, and we have found that out from our experience. However, it is rather perplexing to know how to deal with it. Apparently the states are not yet ready for the limitation of the sale of paregoric to the medical and pharmaceutical professions, so I don't know just what we can do about that.

"Quite frequently our men have gone around to inspect drug stores, that is, an off-color drug store, of which I believe there are comparatively few, and just the minute a man walks in and says, 'I am the narcotic inspector,' the man behind the counter says, 'Oh, yes, I had a robbery.' Immediately the inspector checks up the store and he finds there is a great shortage there.

"Under the Harrison Law he is supposed to report within a certain specified period all robberies or thefts to the local office and also to the collector of internal revenue. We want to do away with that question of doubt of the loss or robbery by making it mandatory that he shall keep a record of all those things, and if he doesn't it is up to him to explain why.

"Next is the matter of labels. I do not believe this adds anything whatever to the present procedure. 'Whenever an apothecary shall sell or dispense any habit-forming drug pursuant to a prescription issued by a physician, dentist or veterinarian, he shall affix to the bottle or other container in which such drug is sold or dispensed, his own name, address and registry number, or the name, address and registry number of the apothecary for whom he is lawfully acting; the name and address of the patient or, if the patient is an animal, the name and address of the owner of the animal and the species of the animal; the name, address and registry number of the physician, dentist or veterinarian by whom the prescription was written; and such directions as may be stated on the prescription. No person shall alter, deface or remove any label so affixed.'

"The pharmacist's label is supposed to stay on all the time so that there will be no question as to its legitimacy at any time it is inspected by either Federal or state inspectors.

"I am passing by a number of these provisions, that do not particularly concern your profession, however, you will be given a chance, of course, to read the whole thing and to determine that question for yourselves.

"Now the matter of suspension and revocation of licenses, this is something that we want to most strongly urge for your favorable consideration. We are not arguing here that there are a large number of unethical pharmacists in the United States. In fact, it is quite the reverse. We have in the United States, registered under the Harrison Law, over 50,000 registrants in the pharmacy class. We have something more than 150,000 registered in the so-called practitioner class, that is, physicians, dentists, veterinarians, surgeons and osteopaths where they are permitted to register. Out of that, upwards of 200,000 registrants in one year, I think in 1930 we had about 111 convictions. We feel that that is a pretty good record for the medical and pharmaceutical professions. In fact, perhaps there is a shade of advantage there in favor of the pharmacist.

"The fact is, however, that when you do discover a man who is willing to prostitute his profession for the sake of making some gain of that kind, you find a man who is willing to go into it on a more or less wholesale scale. It seems rather ridiculous that such a man as that can be prosecuted and punished, and then when he comes out of the penitentiary immediately register and go right ahead with his same old business, and require the Government to go in there with that long, tedious period of investigation to try to stop him again. We feel that if a pharmacist, or physician, or any other registrant under the law has been guilty of a major violation of the law, he doesn't deserve to be licensed, and we feel that his license should be either suspended or revoked.

"That goes, perhaps in a more modified sense, for the physician or pharmacist who happens to be a narcotic drug addict. We feel that there at least his license should be suspended for a period, permitting him to take a cure, a bona fide cure, and rehabilitate himself, with the possibility of permanent loss of his license if he doesn't take advantage of that opportunity, or if he relapses. Possibly there will be quite a little objection to this among the professions, but from an enforcement standpoint we can't exactly see why there should be any objection.

"I could tell you, if I had the right, from the records from our office, the names of doctors, perhaps druggists, I don't know, who have been reported as many as five times as drug addicts. The agent goes in. There is a large shortage of morphine. After a little questioning the doctor usually says, 'I use it myself.' The agent says, 'Now, doctor, you know that isn't right. That is not proper. The best thing for you to do is to take a cure.' He is given an opportunity to go away and take a cure. If it is his first offense, generally he is dismissed with a letter of admonition after he submits evidence in the shape of affidavits from the sanitarium that he has become cured. That goes on for about a year or more and again the inspector goes in, and the same thing is gone through again. The doctor has again purchased large quantities of morphine and again has no records of them, and confesses he has relapsed, and he takes another cure. It is more or less of a continuous circle. It doesn't get us anywhere.

"We feel if they realize they will be given one chance, and in the event of relapse their license will be taken away from them, and they will have no right to use official order forms, that may make a great many of them consider for at least a longer period.

"That is what Section 16 provides. I would like to urge it most strongly for the consideration of you gentlemen because we believe that it is something that is necessary. I have a case in mind right now of a doctor who has been in the penitentiary once before. There are 3 convictions against him, and at the present time there is a case pending against him for prosecution again. The state board down there had taken under advisement the matter of his license and had revoked it. Then in May of the following year for some reason or other they restored it to him, just in time for him to be registered under the Harrison Law again for the next fiscal year, and he again did the same thing. He was again dispensing, of course to addicts, narcotics in large quantities. The inspectors got to work and have now assembled evidence of that additional dispensing, and he has either been indicted, or will be indicted, I expect, in the near future.

"The point is, why can't the state boards coöperate in this matter of persons about whom there can be no doubt of their bad faith in the profession? Should there be any objection to the revocation, for instance, of the license of that doctor whom I have mentioned? Certainly we

have been trying to get the reasons for restoring his license, and we haven't been able to do so. We do feel that, perhaps, on the next conviction we can make such a strong case before the state board they will permanently revoke his license.

"We get coöperation in a number of states I must admit. Florida stands out in my mind because they have revoked a number of licenses down there for improper dealing, particularly among the medical profession, in fact, I believe the medical profession almost exclusively. I don't know at this time of any bad persons among the pharmacists, but nevertheless we urge it as a general proposition all over the registration classes that the right should be there to license, and the right should be there upon proper cause shown for suspension or revocation of that license.

"I do not believe that you gentlemen are very much concerned with the matter of commitment of addicts for treatment. We take the position, of course, that all narcotic drug addicts should be required to take a treatment for the cure of their drug addiction, not only for withdrawal of the drug, but for a sufficient additional period to enable them to become rehabilitated with some chance of keeping away from it. That we feel is more properly a state function than a Federal function.

"Next is the matter of penalties. The first offense is a misdemeanor, and the second offense, leaving it, of course, largely to the judgment of the state, a felony. We thought that perhaps the first offense might also be made a felony with no minimum punishment specified, that in all but severe cases it might be left to the discretion of the courts as to whether they felt in some cases the severe penalty of imprisonment might not be imposed.

"The enforcement of the act is made the duty of, as perhaps I have already explained, the state boards of health, but only contingently. We put that in parenthesis, so that considerable latitude may be permitted there. If the state board of pharmacy is enforcing this law in a given state, and that is a public policy of that state, they can make it the state board of pharmacy. Our bureau has no preference. All we are anxious to see is that some qualified state board takes over the duty of enforcing the Act, and to coöperate with all other agencies charged with the enforcement of the Federal Narcotic Law. At the present time the Federal Narcotic Bureau is obligated under the Porter Act, June 14, 1930, to coöperate with the several state boards and state prosecuting officials, but there is no reciprocal obligation on the part of the state boards and state enforcement officers to coöperate with the Federal Bureau.

"I don't mean to say that we do not get coöperation. In a large number of states we do, and in some states, particularly Pennsylvania, we get most cordial coöperation. For instance, California gives us very cordial coöperation in the matter of joint enforcement. If I may use the word 'joint' advisedly, of the narcotic law. But we feel that it is proper to put that in this law so as to have the legal obligation there of all state agencies to coöperate with the Federal Government, because we feel that is the only way to solve the problem.

"We are doing that internationally now. Colonel Sharman has explained that we have the most cordial relations with his department. We have the most cordial relations with the British and with a number of other countries, and surely if it works out from an international standpoint it ought to work out very well within our own borders. We seek the coöperation of all the state boards at all times, and particularly the state officers."

H. T. Nugent, Field supervisor of the Federal Narcotics Bureau, Washington, D. C., emphasized an important phase of field work. He stated "there is relatively a small number of druggists who have any knowledge of our regulations. That may seem strange, but I base this statement upon my contact with the various inspectors whom we have out in the field—and ask the pharmacist if he knows about Regulation 5, which is our Bible, and he will say, 'Yes, in a general way.' If you ask to see his copy, you will find he hasn't any.

"We ask him if he knows that he is permitted to do this or that, but that he is not permitted to do something else, and he says, 'I didn't know.'

"In one city in the Mid-West about a year and a half ago we sent three inspectors around to find out to just what extent the druggists were familiar with these regulations, and I think they found 20 copies of Regulations 5 out of about 500 drug stores. So you can readily understand why so many technical violations are coming to light from time to time.

"Mr. Anslinger has adopted a policy which seems to be working out quite satisfactorily, and that is by intelligent coöperation with the professional classes. We believe that if we can secure the coöperation of the professional classes we will accomplish our objective, without hurting

anybody's feelings, without sending many people to jail, and that we will get along a whole lot better than if we undertook to go out and, as the field man sometimes terms it, black-jack them into line.

"So, in line with Mr. Anslinger's policy, we have been trying to carry on a campaign of educational work out in a field in every instance wherein an inspector goes into a drug store to check the records and finds some technical violation. The druggist is made acquainted with the provisions of the Harrison Act; he is advised of his duties under the regulations, and cautioned, in case the violation appears to be of a rather technical nature, against a repetition of it.

"Further, in line with Mr. Anslinger's policy, I might tell you that within 60 days after the creation of the Bureau of Narcotics and he assumed charge as Commissioner, he issued a letter of instructions to all narcotic agents in charge, now called 'district supervisors,' to the effect that no criminal investigation of any of the professional classes should be inaugurated unless upon written instructions from the agent in charge to the agent or inspector. A copy of that letter of instructions together with a memorandum of explanation, setting forth the reasons for the investigation, should be promptly transmitted to the Bureau. In that way he hoped to eliminate the complaint, and probably the justifiable complaint, on the part of some of the professional men against the desire of some of our field men to build up a good record at the expense of the professional classes, and made up probably of a lot of petty cases which we didn't feel should be called to the attention of the United States attorney, or even reported to the Bureau.

"In lines with his endeavors to bring about a better spirit of coöperation, he adopted that regulation, or put those instructions into effect, and we find now that the number of cases reported in professional classes has decreased materially. I mean by that: instead of getting a lot of petty cases, we are getting cases that have merit. We are getting cases that justify the attention of the United States attorney. We are not taking up our time with petty, technical violations out in the field, and we find very favorable response to our request from the professional classes for their coöperation.

"We believe that the pharmaceutical profession, the same as the medical profession, and the same as the legal profession, has its quota of undesirables. We have our quota of undesirable employees in the Federal Government. They are necessarily bound to exist everywhere, but we feel that with the aid of the professional classes, and particularly with the aid of the pharmaceutical profession, we can accomplish our objective and probably prevail upon the profession to clean its own house. We would much rather they would do it than to have the Federal Government step in and undertake to do so.

"We have an ample supply of regulations. It is no trouble to get a copy. When our inspector goes into a drug store and makes a check and finds any irregularities, the druggist is furnished a copy of the regulations, and the errors are pointed out. We don't feel there is any excuse, when the store is checked again, for mistakes to recur. Neither can we find any extenuating circumstance.

"Somebody has mentioned during this discussion this morning about the coöperation of states' attorneys and United States' attorneys in cases presented to them. Strange as it may seem, we have had a number of cases recently wherein fellow members of the profession have rushed to the rescue of a brother, and have brought a lot of pressure to bear on the United States attorney's office. We have had quite a bit of trouble getting the United States attorney to prosecute the cases because of political, social and fraternal aspects and other pressure that was brought to bear on them.

"We can accomplish a lot more if we can feel that the members of the professional classes will understand just what we are trying to do. We are trying to help them keep their profession above reproach, and at the same time to enforce our laws.

"So, if we can continue along as we have been doing, follow the policy adopted by Mr. Anslinger, and get a reasonable amount of coöperation from the pharmaceutical profession, our task is going to be much easier."

Chairman Swain appointed as members of the Committee on Nominations: *Chairman*, L. L. Walton, J. W. Gayle and George W. Mather.

The First Session of the Conference, on motion, duly seconded, was adjourned.

SECOND SESSION.

The Second Session of the fourth annual meeting of the Conference of Pharmaceutical Law Enforcement Officials was called to order by Chairman Swain with the following present:

Colonel Sharman, Canada; Secretary H. N. Linstead, England; Messrs. Fischelis, Holton, New Jersey; Hugo H. Schaefer, F. C. A. Schaefer, Dandreau, Lehman, New York; Walton, Cook, Smith, Pennsylvania; Edwards, Shkolnik, Illinois; Kradwell, Ruenzel, Wisconsin; Gayle, Kentucky; Bosley, Rhodes, Delaware; Allan, Michigan; Costello, North Dakota; Slocum, Iowa; Mr. and Mrs. W. Bruce Philip, Tennyson, District of Columbia; Clayton, Colorado; Eberle, Kelly, Swain, Rudy, Maryland; King, Kansas; King and Ford of Ohio.

Chairman Swain called upon **H. V. Smith** to address the Conference. The address follows, in part:

"We in Pennsylvania have felt for a long time that narcotic enforcement is a mighty big subject, and that it really is almost too big for a central government like the Federal Government of the United States, or the Dominion Government up here, to enforce alone. A central government is usually very busy trying to watch the illicit entry of narcotics into the country. They also watch the interstate traffic as well as the intrastate. Then, too, the central government must regulate the legal importation of narcotics. This is why we feel that the states have a joint responsibility, and should take steps to put their own house in order. It is a well-known fact that a drug addict is really a very sick person who cannot help himself, and some one must, therefore, help fight the battle for him.

"Narcotic addiction is also a pressing economic problem, because there isn't a narcotic addict, or a person connected with the whole illegal traffic, who is a useful or productive citizen; he is a financial liability to any government. In Pennsylvania, as in other states, correctional institutions and hospitals contain large numbers of them, and it is the taxpayers' money that pays for their upkeep. And so, if in our humanitarian work, we not only help cure them, and help protect those already addicted, but at the same time prevent others from becoming addicted, we are not only accomplishing a praiseworthy moral purpose, but lifting an economic burden from our taxpayers as well. The average addict and peddler are parasites whose expense to the government as non-producers and criminals cannot be justified.

"As early as 1865 Pennsylvania passed a law forbidding opium smoking. Pennsylvania narcotic laws have been built around this nucleus. Our main law went into effect in 1917, and was importantly amended in 1921. This act provides for the protection of public health by regulating the possession, control, dealing in, giving away, delivery, dispensing, prescribing, administering and use of certain drugs. It also provides for the revocation and suspension of licenses of physicians, dentists, veterinarians, pharmacists, druggists and registered nurses, as well as regulating the use of drugs in the treatment of the drug habit.

"In Pennsylvania the enforcement of this act was placed with the Health Department, and it is an important health measure. However, it doesn't make so much difference under what branch of government this work is done, so long as it is done. We do feel in Pennsylvania that narcotic enforcement is too important to be tied to some other activity, and so, in the Department of Health, there is a separate bureau, the Bureau of Narcotic Drug Control, which deals exclusively with narcotic enforcement.

Mr. Smith then explained the provisions of the Pennsylvania law and said:

"If pharmacists and druggists fully realized the importance of their monthly reports, and their value in protecting themselves as well as the citizens of the state, there would be no objection to the small amount of extra work they may make necessary. In all our activities in Pennsylvania we strive to maintain a friendly attitude. We never use a big stick, nor assume a dictatorial stand. There are certain legal registrations in Pennsylvania. These are classed as "Addicts with Disease," "Addicts with Incurable or Inoperable Disease," and "Addicts Aged and Infirm." Ordinarily the pharmacist need have no fear in filling a prescription bearing such a notation, and naturally, we do not prosecute such a case, unless, as occasionally happens, we find that the physician is wilfully evading the law by writing some fictitious diagnosis.

"The Bureau inspectors generally prosecute in state courts. However, we often work with federal narcotic agents, from whom we receive splendid coöperation, and in such cases prosecutions are generally instituted in Federal Courts."

The following quotations are taken from the address:

"It is surprising how many physicians do not seem to exactly understand what a legal narcotic prescription is."

"Often a druggist lets an incomplete or illegal one slip through."

"In addition to the filling of incomplete and illegal prescriptions, we also find druggists who sometimes only partially fill them, or take telephone orders for narcotics, thinking that later they will receive the prescriptions and be safe."

"An important provision of the Pennsylvania law is that the license of the pharmacist, or physician for that matter, can be revoked for violating the law. It is sometimes necessary that this be done. One of the revocable grounds is, if a pharmacist, druggist, physician, or any professional person, is an addict. The various other violations which I have already mentioned are also grounds for revocation or suspension. In Pennsylvania, in addition to any criminal action that may be taken by the state, or by the Federal Government, we can cite the violator to the State Board of Pharmacy, or whichever licensing board has jurisdiction....

"In Pennsylvania possession, alone, is a violation if the person possessing the narcotic drug has not received it legitimately for his own personal use only, in good faith, and from a duly licensed practitioner, or in pursuance of a prescription given by a duly licensed practitioner.

"The Pennsylvania Act also provides that no person shall use, take or administer to his person, or cause to be administered to his person, or administer to any other person, or cause to be administered to any other person, any of these drugs except under the advice and direction, and with the consent of a regularly practising and duly licensed physician or dentist. So our regulations cover both possession and administration, and violation is a felony. That amendment was passed in 1931. . . .

"One of our most important activities in Pennsylvania might be said to separate the sheep from the goats. We have registered more than 17,000 medical addicts, or those legally entitled to receive narcotics. Many of these are suffering with incurable diseases like cancer and advanced tuberculosis, or are aged and infirm. Withdrawal of the drug would result in collapse and perhaps death. We must be lenient in such cases, but we do urge the attending physician to hold down the narcotic dosage to the very minimum necessary to give the patient a degree of comfort and sustain life.

"As a general rule our Narcotic Bureau has excellent coöperation from the pharmacists, physicians and other professional people of the state, who realize that they also have a tremendous responsibility. In Pennsylvania the Bureau inspectors are empowered by law to make arrests without warrant for any violation. They can pick up a violator on the street, they can go into a drug store or physician's office without a warrant, and they can arrest any person who has violated the law in any particular. . . .

"Some pharmacists and druggists do not seem to understand the state narcotic law with regard to corporations. There are corporations owning chains of drug stores. The Pennsylvania Act provides that if the violation is by a corporation, copartnership or association, the officers and directors of such corporation, or the members of such copartnership or association, their agents and employees, with guilty knowledge of the fact, shall be deemed guilty to the same extent as though said violations were committed by them personally. For their own protection corporations and others operating chains of drug stores should make certain that their employees fully understand the law."

(In closing Mr. Smith spoke in favor of uniform Antinarcotic laws.)

The addresses of Colonel Sharman, Messrs. Tennyson, Nugent and Smith were fully discussed, and special efforts made to bring out clearly the matters of greatest interest. These discussions were participated in by Messrs. George Mather, George Judisch, Dr. James C. Munch, E. F. Cook, Col. Sharman and others. The questions involved in the enforcement of a state narcotic act were considered, and many suggestions advanced for dealing with the drug addict. Special interest was manifested in the selection of the state enforcing agency. Some preference was expressed for the State Department of Health, but the majority seemed to favor the Board of Pharmacy, or a body specially created for the purpose. The definitions set out in the draft of the uniform state narcotic act were given studious attention so as to avoid any definitions inconsistent with those already in effect in the several states. The matter of exempt preparations was discussed at some length, as it was pointed out that the uniform state narcotic act imposes several

additional restrictions and seeks to limit their sale as to quantities, a principle which does not appear in the Harrison Act.

Robert P. Fischelis, being called on by Chairman R. L. Swain, briefly discussed new legislation enacted in New Jersey during the past year and the steps being taken for enforcement.

"Two new laws were placed on the statute books by our Legislature last year. One of them discontinued the licensing of assistant pharmacists, and the other one prohibits the use of the words, 'Drug,' 'Pharmacy,' and words of similar or like import by corporations or individuals who operate stores that are not operated under the supervision of a registered pharmacist. I want to call attention to the principal things in that first law; namely, that the Board is instructed to discontinue the licensing of assistant pharmacists after July 1, 1932. Of course, you cannot discontinue the licensing of assistant pharmacists and abrogate the rights of those who are at that time licensed to practice as such. Therefore, we naturally have a proviso in the new law which retains for assistant pharmacists now licensed all the rights and privileges accorded them under the Pharmacy Act at the time the new law became effective.

"Two years before this law was passed a group of assistant pharmacists had gone to the members of the Legislature and petitioned them to pass a law discontinuing the licensing of assistant pharmacists, but automatically making them registered pharmacists. We realized, of course, that unless we provided in some way for assistant pharmacists then on the record books of the Board to become licensed we would have this situation to confront every year, and that perhaps at some time or other there would be a political combination favorable to the group that was advocating automatic licensing of assistants.

"We know our neighbors in New York have some 2500 assistant pharmacists who are a constant source of trouble because they are continually bringing to the attention of the Legislature the fact that they were licensed at one time to do certain things and there is no reason why they shouldn't become fully licensed now. I must explain, too, that we have only 250 assistant pharmacists in good standing on our records; therefore, the problem is not as large with us as it would be in some states where there are thousands of assistant pharmacists.

"We provided in the new Act that any assistant pharmacist who was licensed prior to July 1, 1925, and who had been in continuous practice as an assistant pharmacist from the date of his registration as an assistant, could be given an examination to qualify him for full registration, within 2 years after the passage of the Act.

"You may wonder why we set that arbitrary date of July 1, 1925. The fact is that in July 1925, we began to require by law that assistant pharmacists have some college training. At that time one year, and later 2 years of college training were required, so that assistant pharmacists had to meet nearly the same requirements as registered pharmacists since that date. The experience requirement was 3 years, the college requirement 2 years. We felt that the College group did not need to be provided for, because if they had as much as 2 years of college training they would naturally continue and conclude their college course, and at the time they reached the age of 21 and had the 4 years of practical experience required, they would, no doubt, take the registered pharmacist examination. The group that was registered prior to July 1, 1925, with few exceptions had no college training.

"We found upon consulting our records that there were about 80 of those, and we felt, therefore, that if they could show that they had had continuous experience as assistants and met the other requirements as to citizenship, age, moral character and so forth, we could give them a special examination permitting them to qualify for full registration, and if they did qualify to forever get them off the books as assistants. If they did not qualify it could be demonstrated to the Legislature that they had been given their chance and had failed to make good.

"The important part of the second new law reads as follows: 'From and after the passage of this Act it shall be unlawful for any person, partnership or corporation to carry on, conduct or transact business under a name which contains as part thereof the word, "Pharmacist," "Apothecary," "Chemist Shop," "Druggist," "Drug" or any word or words of similar or like import, or in any manner by advertisement, circular, poster, sign or otherwise describe or refer to the place of business conducted by such person, partnership or corporation by the terms just enumerated unless the place of business so conducted is a drug store or pharmacy operated or managed at all times by a registered pharmacist.'

"We incorporated into this bill, which is a supplement to the Pharmacy Act and is, there-

fore, the latest expression of the Legislature on the subject, a form of procedure which eliminates trial by jury in cases of Pharmacy Law violations.

"This procedure is copied after our state medical and dental practice acts. This provision denying the right of trial by jury to the defendant has been attacked on various occasions in the courts, but has been upheld by the highest court in our state. Most of our cases are tried in the district court. From there they may go to the Common Pleas Court, if it is desired, or we may take an appeal on writ of certiorari, to the Supreme Court, and the decision of the Supreme Court may be carried to the Court of Errors and Appeals. This highest court in our State has upheld the denial of trial by jury in such cases as these.

"I would like to read a very short paragraph from the decision of the Court of Errors and Appeals in the case in which they upheld the denial of right of trial by jury in these matters, because it might be of interest to some of you. It was a case of the Board of Medical Examiners against some one who had been accused of practicing medicine without a license. It is known in the record as the case of the State Board of Medical Examiners *versus* Ferdinand Buettel, and after telling about the matters involved the Court says this:

"When the decision in the Curtis case was announced, apparently as a sequence thereto, the Act was again amended and this time that the Legislature intended that the proceedings should be before the court without a jury was made clear and specific by adding after the words 'summary manner' the words 'without a jury.' We, therefore, have a clear and unequivocal mandate from the Legislature that the proceedings shall be summary in character and by the court without the intervention of a jury.

"The conclusion we reach is that the Act under which the present proceeding was taken is a valid exercise of the legislative power, and that the Legislature clearly intended that the proceedings should be heard in summary manner without a jury. That the steps in the proceedings are not fully set forth, we think is not a ground upon which to nullify that purpose. Where in the Act they are left open it will be presumed that the course of procedure in the trial court was intended. This does not render the Act unconstitutional. The right of trial by jury is invoked according to the nature of the prohibited act and does not rest alone on the mode in which it is to be tried. It is the substance and not the form that must control in determining the right. The court in the present case sits solely by legislative mandate, and for the purposes of the trial is a statutory tribunal.

"So we have a very clearly established precedent for this procedure, and we think that it is going to help us greatly in future enforcement.

"That brings me to a very important question in the matter of law enforcement. Our experience is that just because one has the power to do certain things is not a good reason to exercise that power to the limit immediately and at all times. In working with the Legislature of our state we have naturally come to hear all of the various complaints that are made by persons who at one time or another violate the law, and persons who oppose restrictions of any kind with reference to the sale of drugs, and naturally we have tried to meet the arguments that have been advanced.

"One of the stock arguments has been that the dealer was not notified and did not know anything about the illegality of the sale of certain remedies. No matter what the remedy was, he never knew it was one of the things that could not be sold. We do not have in our law a schedule of drugs and medicines to be sold by general merchants. We have the poison schedule, but no schedule of simple remedies. Our law simply states that no one who is not a registered pharmacist shall sell any drugs, medicines or poisons, with the exception of non-poisonous, patent or proprietary medicines, and there is a proviso that nothing in the Act shall interfere with the sale of simple non-poisonous domestic remedies by retail dealers in rural districts.

"We have been accused, of course, of favoring pharmacists in our enforcement procedures in addition to not notifying merchants. Not having any licensing provision for merchants in our law, it was, of course, impossible for us to know where the stores are that sell drugs and how many there are. We had endeavored to obtain that information from various critics of our law enforcement procedure. We endeavored to obtain it particularly from those manufacturers who sell these simple drugs in our various counties and who have been the most vociferous in their objections to any kind of legislation governing the sale of drugs and medicines but, of course, they did not offer such a list although we gave them the opportunity to do so.

"Having failed to obtain lists of the merchants selling drugs from those who could have supplied them, we set out on a program two years ago to discover just what stores were selling drugs, how many there were, and what drugs they were selling. We employed an inspector to do nothing else but ride up one road and down another in each county, county by county, taking the names and addresses of these stores, and going into the stores and getting an inventory of their patent medicines, and other drugs and medicines that were being sold. That was quite an undertaking, but it is completed for 18 counties. Something like 6000 stores were visited in those counties, and something like 3000 were found to have some drugs or medicine on their shelves. We have a list of those drugs, and we have tabulated them. The work is not entirely finished. Three counties remain to be surveyed, but the list we have so far is quite illuminating.

"It was found that there were, of course, a certain few remedies that were sold to a large extent by all stores, and then there was a scattering of remedies of various kinds, ranging from the simplest things to the most complex products including proprietary products of some of our large manufacturing houses which one would hardly expect to find in surroundings such as these rural stores. Proper use will be made of that information.

"The next thing we did was to get out a circular of information. I have a few of them here for distribution. It is headed, 'Important Notice to Merchants. Do not display drug signs,' and the first paragraph or two relate entirely to this new law with reference to the display of drug signs, and shows that we have given them since April 28, 1932, when the law became effective, up to July, to remove signs and that we are now going to begin to prosecute. Then we have outlined below the requirements with reference to the sale of drugs and medicines. The heading over that is, 'Do not sell drugs, medicines or poisons except as noted below unless you employ a registered pharmacist.' We cover four points: The sale of non-poisonous patent medicines, the sale of agricultural poisons which, of course, is permitted, the sale of flavoring extracts and the sale in rural districts, that is by stores in rural districts, of simple non-poisonous domestic remedies.

"The next step in the circular is to inform the merchants that they should not depend for their information, on the provision of the pharmacy law, upon salesmen of manufacturing houses and that we are very glad to supply the information if they will ask for it. This circular had not been out more than two or three days when we were deluged with mail from various merchants, sending in lists of drugs they had and asking us to check off what they could sell and remain within the law.

"Another thing we have done is to send every member of the State Legislature a copy of this circular, with a letter informing the senator and the assemblyman that we are now enforcing this law which they passed at the last session; that we have given the dealers full information regarding it; that we have waited several months before beginning the enforcement with reference to the display of drug signs; that there is now no longer any excuse on the part of the dealer for ignorance of the law.

"One further point I want to call to your attention, is the decision of the Supreme Court recently in the case we brought against a dealer for selling Sweet Spirit of Nitre. It was one of those cases where we had a jury trial, and the district court refused to direct a verdict, although we had more expert testimony at that particular trial than we ever had anywhere before. The experts clearly established that Sweet Spirit of Nitre and Essence of Peppermint are medicines within the meaning of the Pharmacy Act and therefore can be sold only under the supervision of a registered pharmacist. However, the District Court Judge said that it was not for him to decide whether these articles were medicines on the basis of the evidence submitted, and the jury decided that the defendant was not guilty. The case was taken to the Supreme Court and after a year the Supreme Court decided, on the basis of the testimony submitted, there was no doubt these substances were medicines and that the judge should have directed a verdict for the Board, and a new trial was ordered. When it came time for the new trial the defendant pleaded guilty and that settled the case."

Dr. Fischelis' address raised a number of interesting questions, and was discussed at some length. As these discussions deal with the very essence of law enforcement, it is presented in full.

A. H. King stated that Kansas has a law similar to that of New Jersey and like conditions obtain. Kansas license fee is $2.50. He cited a case involving 8 persons, which was defeated in the lower court; carried to the Supreme Court and sent back for rehearing; the defendants then

plead guilty. He also referred to an extreme case where sale was made of corrosive sublimate, wrapped in paper along with packages of meat and groceries.

Dr. Fischelis said that license was not an unmixed blessing; the one licensed may use it to advantage in magnifying his grant under the license. He said Connecticut has a license system, the items that may be sold are named and displayed with the certificate. H. C. Ruenzel asked about the definition "rural areas." Dr. Fischelis answered—that in New Jersey it signifies an unincorporated village, a place of less than 1000 inhabitants.

A. H. King said that when the license system was started in Kansas more than 2500 dealers were selling remedies with fewer than 400 licensed dealers; now there are fewer than 2000 dealers handling remedies and the number of items that can be sold are considerably less and the public is better protected.

Secretary E. F. Kelly expressed appreciation of the AMERICAN PHARMACEUTICAL ASSOCIATION for the good work of the Conference. He hoped it would continue to grow and prosper.

Secretary H. N. Linstead referred to a statement by Dr. Fischelis relative to the possibility of the dealers using the license to make the public believe they have qualifications which they don't possess. In England dealers are given no certificate, but their names are made of record. He asked relative to the meaning of "proprietary medicine."

Dr. Fischelis replied that the difficulty is overcome by the definition for the word "medicine;" the term "drug" is defined in the Food and Drugs Act. The manufacturer must prove his preparation to be a proprietary, "not a medicine or drug within the meaning of the Act." J. W. Gayle inquired whether the one licensed in Kansas receives a list of articles he may sell. Mr. King replied that no list was given them; they are permitted to sell non-poisonous proprietary and non-poisonous domestic remedies in original packages.

Chairman R. L. Swain said that "the distinction between patent and proprietary products constituted one of the most difficult problems in law enforcement..... The so-called exemptions clause, almost without exception states that the law shall not apply to the sale and distribution of patent and proprietary remedies. They may use the word 'medicine,' but the words 'patent and proprietary' are almost always used together. He remarked that 'if it were not for the fact that this grouping goes back a great many years, you might look upon it as an exceedingly clever piece of phraseology on the part of those who really wanted to make the exemption clause in every sense of the word an exemption clause, but it goes back so far as almost to create the impression in your mind they are synonymous terms. In the development of ethical proprietaries, which we know a great many potent preparations are, it seems to me we have in exemption clauses an idea which could come very near nullifying a great deal of the pharmacy acts.' "

Chairman Swain stated that "the Committee on Proprietary Medicines, of the AMERICAN PHARMACEUTICAL ASSOCIATION, has done some very effective work in this field over a period of a number of years. As an enforcement official, however, I believe that the subject has become of greater importance in the last two or three years, and that this whole subject of patent and proprietary terminology should be re-studied..... A patent medicine, it has been said by eminent counsel, is not a patented medicine. It is simply a terminology, or designation, which refers rather generally, so far as public acceptance is concerned, to certain classes of medicinal preparations. They are usually those which are sold under specific names, some coined names, with directions for their use, the contents of which are kept secret, freely advertised and more or less freely distributed....."

His own individual reaction is, if it can be shown an article is proprietary in the sense that it is owned by somebody, and its manufacture is controlled by some individuals; he was of the opinion that under that designation the very widest variety of medicinal proprietaries can be sold without any legal hindrance. He had been working on it for some months, but the more thoroughly he investigated the subject, the more thoroughly he was satisfied that this language is ambiguous and he would like to see some effort made to distinguish very clearly between patent medicine and proprietary medicine. In the report of the A. PH. A. there is a distinction made between the ordinary proprietary "patent" and the ethical proprietary. This is a very valid distinction, but it is a distinction which does not find any recognition in the state laws. He mentioned it because in his opinion no great success is going to attend our efforts in controlling the situation until it is understood what is meant by "patent" and "proprietary."

A review of the Operation of the Pennsylvania Pharmacy Law in 1931 by **John M. Woodside** was presented and read by **L. L. Walton.**

"The Pharmacy Law of Pennsylvania was amended by the Legislature in 1931. The amendment, referred to as Act No. 228, became effective on June 22, 1931, the date of approval.

"Because of the scope of the amendment and because so many unregistered dealers were affected by its provisions, the field agents were instructed to concentrate their attention mainly upon its enforcement.

"A review, then, of the operation of the Pharmacy Law in Pennsylvania in 1931, is virtually an account of the conditions which the field agents found and the difficulties which the Board encountered in its endeavor to compel compliance with the amendment.

"With the exception of the clause which requires that all drugs and proprietary remedies be put up under qualified supervision, this Act does not affect the conduct of pharmacies. It prohibits the sale, by unregistered dealers, of several classes of drugs and all preparations in which the drugs are an ingredient."

The conditions under which drugs, medicines and poisons may be sold at retail in Pennsylvania, are prescribed in Section 13 of the Pharmacy Law and it is this section which Act No. 228 specifically amends.

The following quotation from Act No. 228, is the amendment in its entirety:

". . . . nor prevent storekeepers from dealing in and selling commonly used household drugs *or proprietary medicines* when the same are offered for sale or sold in *original* packages, *except when administered in single doses on the premises*, which have been put up ready for sale to consumers by pharmacists, manufacturing pharmacists, *manufactures of proprietary medicines*, wholesale grocers or wholesale druggists, *under qualified supervision: Provided, however, that the proprietary medicines or household drugs sold or offered for sale shall not contain any opium, coca leaves, chloral, or any of the salts derivatives or compounds thereof in and quantity whatsoever: Provided, also, that remedial agencies that are administered hypodermically, intramuscularly or intravenously, and all medicinal substances containing barbituric acid or its compounds, and biologicals (except those biologicals distributed to State and county health officers), and medicines containing substances of glandular origin (except intestinal enzymes), shall be sold only by registered pharmacists or assistant pharmacists employed by or conducting a registered pharmacy.* Any person violating the provisions of this section shall be guilty of a misdemeanor, and, upon conviction, shall be sentenced to pay a fine of not less than fifty dollars ($50.00) or more than five hundred dollars ($500.00), or imprisonment for not more than one year, or either or both, in the discretion of the court."

This paper was discussed by Messrs. M. N. Ford, F. H. King, E. F. Cook, R. P. Fischelis and others. The Pennsylvania law is of great interest as it has some restrictive provisions not usually met with. For instance, the sale of preparations containing opium in any quantity is confined to pharmacists, and this is true of preparations of glandular origin.

(It is hoped later to publish the discussion by Mr. Woodside; in the meantime those desiring to read it can obtain a typed copy by addressing the JOURNAL A. PH. A., 10 W. Chase St., Baltimore.)

J. E. Edwards, Chief Inspector, Illinois Department of Registration and Education, Chicago, Illinois, addressed the Conference on the "Enforcement of the Illinois Pharmacy Act; in part, as follows:

"The Illinois Department of Registration and Education holds examinations to qualify seventeen different trades and professions to practice in the State of Illinois, they are divided into two classes: Public Welfare and Public Health. The particular division I am connected with is the Complaint Division, which investigates any one said to be practicing without a license, also to investigate those who hold a license who do not conform to the provisions of the law. The main office of The Department of Registration is located in Springfield, Illinois, the capital. The Complaint Division which is a branch office, is located in Chicago.

"The Pharmacy law is one of the seventeen branches of the law which comes under this Department's jurisdiction.

"Two of the points I wish to bring out at this meeting on law enforcement are, the Criminal Prosecutions and the need for a Revocation Clause in the Pharmacy Act.

"The Honorable M. F. Walsh, Director of the Department of Registration, after carefully

studying the procedure of the Complaint Division, decided that it was not functioning properly and made various changes, which have proven beyond a doubt that it does not always pay to arrest a man at the slightest provocation. Mr. Walsh laid out a new policy for the Complaint Division which I will try and explain to you: . . . .

"We checked with all the Inspectors and got their reports of the attitude of the different State's Attorneys and Judges throughout the State, and in Chicago a personal investigation was made by myself. We found the Court Dockets full of our cases and the Judges and State's Attorneys kicking because this Department was bringing in minor violations and were allowing the alleged violators to go on the promise that they would not violate again. This was breaking down our whole law enforcement, as the violators would go right back to work and hold our laws in contempt.

"To take care of a situation of this kind we had to build up a new respect for the Department. To-day we do not go into court unless we are quite sure that we will get a conviction, and only then on cases that warrant a prosecution, or on minor cases where the violator refuses to quit violating the law. To-day our convictions run over 90% and our enforcing problem is much easier with the system now used.

"We have what we call an affidavit or 'Gentlemen's Agreement,' which reads as follows: I the undersigned, hereby admit that I do not hold a certificate of registration as a ————————, and that I have violated the law pertaining to same. The Inspector has explained the law to me, and I do hereby agree if given the opportunity, that I will not do any more work at said profession in the State of Illinois, at any time, in the future unless I obtain a certificate of registration for the practice of said profession issued by the Department of Registration and Education of the State of Illinois. . . .

"Arresting a man does not correct a violation; talk to him and explain the law to him and tell him he will be arrested if he violates again, and it is the fear of that arrest that stops the violating. If you arrest him first the fear is gone and he immediately creates a hatred.

"The only violations where a warrant is taken out is major violations on which we receive a great amount of publicity when we win our case, this also puts fear into the minor violators. . . .

"The other point I wish to take up is the revocation clause, which is lacking in the Illinois Pharmacy Act.

"The laws which come under our jurisdiction are made to protect the public, and the public has very little respect for any law that allows a man, because he holds a license, to do as he pleases...

"Recently we prosecuted one of the biggest cancer quacks ever prosecuted in Illinois. We found connected with him, or doing what you would call 'fronting' for him, six doctors who were allowing their names to be used as a cover-up. These doctors were cited before our Medical Committee to show reasons why their licenses should not be revoked. Some of them were revoked outright and the balance were suspended for a period of one year.

"In our Pharmacy law it states that after a certain date no one will be allowed to own a drug store unless he is a registered pharmacist, in the same section in another paragraph it says, a corporation may open a pharmacy if all the officers are registered pharmacists. To get around this law a man who wants to open a drug store and is not a registered pharmacist, will call upon two or three registered pharmacists to incorporate under their names, these registered pharmacists having no interest whatsoever in the business, and these are the type of drug stores which cause a lot of trouble and have no respect for the Pharmacy Law.

"If the Pharmacy Law had the same revocation clause in Illinois as the Medical Practice Act, the licensed pharmacists loaning their names to the unlicensed drug store owners, would be revoked or suspended for loaning one's name to another in the illegal ownership of a drug store."

W. Bruce Philip presented a paper regarding the recent California case upholding the pharmacy act; a partial report follows. The paper was prepared by **John Culley** of San Francisco, who was the chief witness for the State and, practically, carried the burden of the prosecution. This case was tried in March of 1932, and was an aftermath of a case *ex parte* Gray, tried two or three years ago and carried to the Supreme Court of California, and the pharmacy law was upheld. Mr. Philip referred to the Arizona case that was not favorable to the Arizona state law. . . . .

He explained that California has a lower court, a justice or police court, then the next step is the Superior Court; neither the lower nor the Superior Court are courts of record. Then

there is the Court of Appeals and the Supreme Court, which are courts of record. This case only went to the Superior Court and will not be appealed.....

Mr. Philip stressed the importance of the proper preparation of a case and remarked that the grocers lost their case through faulty preparation. The suit under discussion was called "The Scott and Gilbert Injunction against the California State Board of Pharmacy." The California law is so written that a merchant, within 3 miles from a drug store, may obtain a license and sell a prescribed list of drugs..... Scott and Gilbert sell almost exclusively to these general merchants holding special licenses from the Board of Pharmacy. They sell their merchandise to dealers within the 3-mile zone, so there were conflicts. When Scott and Gilbert were told about a certain store, they immediately removed the stock, but probably, the next week the same merchandise is found in some other store. These conflicts led to an injunction by Scott and Gilbert against the California State Board of Pharmacy. Their complaint listed some 60-odd drugs and medicines, proprietary articles, etc., that had been stopped by the State Board of Pharmacy inspectors, and which they wished to continue selling to their customers..... A temporary injunction was issued by Superior Judge Harris, and the case was then transferred for trial to the Superior Court of Judge Goodell.

Mr. Philip named some of the drugs and preparations included in the list under question; among them, S. & G. branded articles, zinc oxide plasters, cardamom seeds, saltpeter, cod liver oil, hydrogen peroxide, S. and G. belladonna plasters, a trade-marked brand of cascara tablets, etc.

These grocers were of the opinion that taking a preparation, admittedly a drug, and adding a trade-marked name will bring it into line as a proprietary medicine.

Mr. Philip said this case settled on two of these items, zinc oxide plaster and cod liver oil. Scott and Gilbert had a physician testify that zinc oxide plaster was merely a mechanical appliance without any medicinal properties; that cardamom was a flavor with no medicinal qualities; cod liver oil merely a food without any medical properties; hydrogen peroxide, a toilet article without medicinal value; that "S and G" before the name of preparations were trade-marked preparations and, therefore, "proprietary" remedies, and could be sold by any person.

He explained the State Board of Pharmacy's contention that under the Pharmacy Law the drugs in the list are all official drugs and medicines of the U. S. P. and so recognized by the Food and Drugs Act and, therefore, cannot be sold to the public except by and through a registered pharmacist. The State Board of Pharmacy also held that of the S. & G. preparations none are proprietary remedies under the law; none of them can be copyrighted or patented, as the formulas are not secret; the formulas, or modifications of them, are all official in the U. S. P. or the N. F.; that any pharmacist can prepare or duplicate them; Scott & Gilbert did not originate any part of the formula and, in fact, did not even manufacture some of them. Mr. Philip stated that in cases of this kind, attorneys were selected who had legislative or judicial experience, which would enable them to be of service in framing new legislation or amendments. He also referred to the legal force in behalf of the Board of Pharmacy. The hearing extended over a period of three weeks.

The points in the case were then explained by Mr. Philip: The first witness for Scott & Gilbert was a dealer in cod liver oil for animal food, who was of the opinion that the oil was a food, without other medicinal value. Books were brought into the records, also the testimony of an authority on dietetics, and an article of the *Saturday Evening Post*, which was not accepted as scientific evidence. A physician testified that zinc oxide plasters were mechanical appliances without medicinal value.

Mr. Culley's experience as quiz-master came in good place in explaining the facts to the judge. The first steps of the presentation were to establish the qualifications of the witness. Mr. Culley gave a history of the drugs and enlarged on their medicinal value; he explained that this quality was not removed because of other uses for the drug and, as medicines, their sale must be protected. Cod liver oil became the real issue—the food value was admitted and the importance of vitamins stressed, so that compliance with standards was mandatory. The value of medicinal plasters was explained, also of the other items made of record and the insufficiency of the trade-mark as establishing "proprietary" right in the formula was disproven. The AMERICAN PHARMACEUTICAL ASSOCIATION's definition of "proprietary" remedy, was brought into the evidence. The grocers' attorney placed in evidence the statement of the U. S. P. on the application of the monographs

on to the use of the substances included for medicinal purposes. The judge, however, held that this did not take away their value for other than medicinal purposes. The attorneys for the grocers read an article when the case was argued in which commonly used items were described by references to their places in the U. S. P.—a line will explain the effort in ridicule: "washed in U. S. P. water (page 55) with U. S. P. soap (page 326). Had a dish of prunes (N. F., 381), etc.," Mr. Philip was of the opinion that this effort did not help the case of S. & G.

The judge rendered a decision in favor of the Board. Mr. Philip stated that, as a result, the Retail Druggists' Association and the Retail Grocers' Association have been brought together in a purpose to come to an understanding as to sales of drugs in grocery stores.

As shown in the report this address was discussed by Messrs. A. H. King, R. P. Fischelis, L. L. Walton, R. L. Swain and others. The importance of preparing cases as completely as possible in advance of trial was emphasized. All expert testimony should be understood and gone over before actually submitted in court, whenever this can be done. It was pointed out that when the nature of a product is to be established, it is advisable for boards of pharmacy to rely upon medical testimony. Medical opinion is usually more acceptable, and pharmacists are relieved of the implication that their testimony is biased.

Chairman E. Fullerton Cook, U. S. P. XI Committee of Revision, presented a paper on "The Pharmacopœia as an Aid in Law Enforcement." References are made at this time to parts of the paper and concluded with a summary by Chairman R. L. Swain:

"The use of pharmacopœial standards of strength and purity as an aid in the enforcement of drug legislation is but one of the services which the Pharmacopœia renders and, only within recent years, has it assumed importance.

"The U. S. Pharmacopœia was established by the medical profession early in the nineteenth century for the purpose, to quote the first Preface, 'of selecting from among substances which possess medicinal power those, the utility of which is most fully established and best understood; and to form from them preparations and compositions, in which their powers may be exerted to the greatest advantage. It should likewise distinguish those articles by convenient and definite names, such as may prevent trouble and uncertainty in the intercourse of physicians and apothecaries.'

"However, the 1820 Committee also stated that 'Its usefulness depends upon the sanction it receives from the medical community and the public; and the extent to which it governs the language and practice of those for whose use it is intended.' And thus there was immediate recognition of the element of enforcement, although actual legal support for its standards was deferred for almost a century "

(Chairman Cook then discussed the legal phases of the Pharmacopœia, and its relation to the Food and Drugs Acts. He also discussed synonyms in legal relations and made references to the prefaces on the subject in preceding editions of the Pharmacopœia.) In referring to the work of the Conference, he said:

"An organization of Law Enforcement Officials operating honestly in the line of duty frequently discovers defects in the legislation under which they function. As their attention is properly concentrated upon enforcement and, where necessary, upon prosecution, they also discover defects in the Pharmacopœia and it is proper and a duty to bring these to the attention of the legislatures and the Committee of Revision. In these respects this Association can render a service of great social value to the Nation and what they have already done in this line is accepted with appreciation."

Concluding his discussion on "Standards and Assays," he said:

"One feature of the U. S. P. policy which is deserving of emphasis is the importance of exact details in tests and assays. This principle was discussed at length in the recent conferences on vitamin standards for Cod Liver Oil. The International Vitamin Conference adopted standards for vitamins A and D, to be used as a basis of comparison but made no recommendation for the procedure in assay. The new British Pharmacopœia has accepted a similar principle for some of its biologic assays, for instance, Digitalis leaf is to be compared with the internationally adopted Powdered Digitalis, but the frog, cat or guinea-pig methods of assay may be used. In the enforcement of the Food and Drug Acts, all officials have learned the importance of exact details in tests and assays so that loopholes are eliminated as far as possible. This principle has constantly been in mind in pharmacopœial revision and if court experience has demonstrated defects in this

respect in any of the present texts or assays, attention should be called to them that they may be corrected.

"The present revision is fortunate in having the critical review of all proposed texts by officials of the Food and Drug Administration at Washington, and the new Pharmacopœia should be more efficient as an aid to law enforcement than any of its predecessors. It is also increasingly important that U. S. P. standards and methods should be right, for the Food and Drug Administration officials at Washington have announced that they shall more rigidly enforce official standards in the future than has been possible in the past and that, under the law, they must accept the standards set by the authorities since the law gives them no discretion.

"This warning should stimulate the interest of every one affected by U. S. P. regulation and ample opportunity will be given those who are interested, to offer suggestions or criticisms of the proposed new texts, through the extensive publicity program undertaken by the Committee of Revision and approved by the Pharmacopœial Convention.

"Those who are interested in any specific texts should communicate with the General Chairman."

Dr. Cook's paper was discussed by Dr. R. P. Fischelis at some length. The points brought out were that there is a direct relation between pharmacopœial revision and law enforcement. It was suggested that official products, such as the various drugs that are used as foods and those that are used as spices and condiments might be designated as "medicinal." This would emphasize the medicinal use of such products, and might be effective in certain phases of law enforcement. If this is not feasible or desirable, it was suggested that such products as lard, water, cinnamon, clove and others might be set out in one portion of the U. S. P. and thus not included in the regular alphabetical arrangement. The Committee on Revision was urged to give greater recognition to synonyms. An article is frequently purchased under a name different from that officially recognized, and this imposes upon the prosecution, in the event of trial, the necessity of proving that the article purchased is the article recognized in the U. S. P. under a different name.

The report of the Committee on Nominations presented the following for officers of the ensuing year: *Chairman*, Robert L. Swain, Maryland; *Secretary-Treasurer*, M. N. Ford, Ohio; *Delegate to the House of Delegates*, George Mather, New York.

L. L. Walton, acting as chairman, entertained a motion to accept the report of the Committee on Nominations. The motion was unanimously carried by vote.

Secretary-Treasurer M. N. Ford presented the following report:

The following states were members of the Conference, 1932: Alabama, Ohio, Michigan, West Virginia, Connecticut, Colorado, Illinois, Pennsylvania, New Jersey, Oregon, Utah, North Dakota, Indiana, Kentucky, Florida, Iowa, Maryland, Arkansas, New York, Kansas, Mississippi, Wisconsin, South Dakota, Maine, Delaware, Tennessee, South Carolina, Idaho, Minnesota, Wyoming, New Mexico, Dist. of Columbia, North Carolina, Virginia, Massachusetts.

Balance of Cash on Hand at Close of Last Annual Meeting		$166.38
Disbursements:		
December 12, 1931, for Letter Heads	$ 9.20	
March 16, 1932, for Reprints and Publication	77.72	
May 3, 1932, Smith Signs Company	4.40	
May 3, 1932, Dr. R. P. Fischelis, Postage	5.12	
June 30, 1932, Dr. R. P. Fischelis, Postage	1.00	97.44
Balance		$ 68.94
Receipts:		
From 35 States from February 29 to August 10, 1932, at Five Dollars Each, as Contributions to the Conference	$175.00	
Total on Hand		$243.94

On motion of G. V. Kradwell, seconded by P. H. Costello, and a vote, the report of the Secretary-Treasurer was approved.

On motion of R. P. Fischelis, seconded by Charles Clayton, the following resolutions were adopted and ordered sent to the House of Delegates, A. PH. A.

WHEREAS, serious study is being given to the need for further control of narcotic drugs and to the enactment of a uniform state narcotic act; and

WHEREAS, the objective and purpose of this movement is to more adequately control and regulate the use and distribution of narcotic drugs, and

WHEREAS, the use and distribution of narcotic drugs is restricted to legitimate medical needs; therefore, be it

Resolved, by the Conference of Pharmaceutical Law Enforcement Officials that the uniform state narcotic act be written so as to restrict the retail sale and distribution of narcotic drugs and medicines containing any amount whatsoever of narcotic drugs to duly registered pharmacists in their respective states, so that the intent and purpose of the law may be achieved.

Upon motion duly seconded, the Conference adjourned.

R. L. SWAIN, *Chairman*. M. N. FORD, *Secretary*.

(It seemed to be necessary to condense and abstract some of the reports and addresses. Should any member desire a more complete report of any of the parts of the foregoing the Editor, with coöperation of Chairman Robert L. Swain, will endeavor to comply with such requests.—*The Editor*.)

CORRESPONDENCE.

We are in receipt of the following request from Prof. Frederick Grill:

Note to the Editor.—In the article by Frederick Grill, "Suggested Reasons for Color Changes in Prescriptions Containing Salicylates" (JOUR. A. PH. A., 21 (1932), 765), references to two previous articles were omitted, one by John C. Krantz, Jr., and the other by John C. Krantz, Jr., and C. Jelleff Carr.

John C. Krantz, Jr.—JOURNAL A. PH. A., 17 (1928), 1203—accounted for the darkening of a solution containing sodium salicylate and sodium bicarbonate on the basis of oxidation, especially the ortho hydroxy benzoic acid derivatives. John C. Krantz, Jr., and C. Jelleff Carr—JOURNAL A. PH. A., 18 (1929), 1250—showed that pure sodium salicylate with sodium bicarbonate in solution darkened in color, indicating that impurities, such as iron, were not wholly responsible for the color change.

(*Signed*) FREDERICK GRILL.

George M. Karns requests that the following corrections be inserted in the appropriate place in "Behavior of Iodine Solutions at Liquid, Solid Interfaces. I. The Wetting Power of Iodine from Various Antiseptic Solutions"—21 (1932), 780.

Correction:

Fig. No. 1. Curve for 1% Iodine.
At 0% excess potassium iodide, the iodine adsorbed per gram of silk should be 200 mg. rather than 160 mg.

Fig. No. 2. Curve for 7½% Iodine.
At 0% alcohol, the iodine adsorbed per gram of silk should be 515 mg. rather than 490 mg.

(*Signed*) GEO. M. KARNS.

Dr. George D. Beal has favored the JOURNAL with a reprint of an article entitled "Studies of the Cause and Nature of Dental Caries." This is a report upon the nine years' investigation of this subject undertaken at Mellon Institute, the last six of which have been under his executive direction. This is probably the first investigation in this field in which the facilities of a strong chemical laboratory have been coupled with those of an equally strong faculty of dentistry, having available at the same time a wealth of clinical material. The article is reprinted from the *Journal of Dental Research* for October.

The Mexican Department of Health has received, since 1927, 30,000 applications for the licensing of domestic and foreign medicinal products. Of this total 6000 applications are still pending, and the department, according to information received by the Department of Commerce from the commercial attaché at Mexico City, has undertaken to clean up these cases and to expedite the handling of new applications. The plans call for action with respect to new products within twenty days from the date of the application.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meeting of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

BALTIMORE.

The Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION held its regular monthly meeting at the Emerson Hotel, Tuesday, November 22, 1932. Dr. Harry S. Harrison, vice-president of the Baltimore Branch and retail pharmacist of wide experience, was the speaker of the occasion and had for his subject: "Prevailing Present-Day Conditions in the Retail Drug Business."

Dr. Harrison attributed the numerous evils besetting the retailer to three main causes: The invasion of the drug field by the chain store, the rapid increase of the drug store to population ratio in many urban centers, and lastly, the present economic depression.

The chain store by predatory merchandising methods has just about destroyed the price structure in many lines, while the increase in the number of stores has meant keener competition and less volume for every one, according to Dr. Harrison. In addition, the present depression has caused a sufficient slump in the buying power of the public to create an alarming condition for many retailers.

Dr. Harrison urged a resurvey of the drug field, with a view to controlling or, where possible, lessening the number of stores. He emphasized the need for greater coöperation among the independent retailers. Finally, he stressed as most important the necessity of developing proper contacts with neighboring physicians and of urging them to prescribe U. S. P. and N. F. products rather than patent and proprietary medicines of uncertain composition.

Dr. Harrison's paper was discussed by Doctors Swain and Kelly, the former elaborating upon the drug store population ratio as applied to Baltimore and to Maryland, the latter giving some very interesting figures from the recent St. Louis Drug Store Survey.

WM. F. REINDOLLAR, *Secretary-Treasurer.*

CHICAGO.

The 208th meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the University of Illinois College of Pharmacy, Tuesday, November 15, 1932. The meeting was opened by the president, R. E. Terry.

The speaker of the evening was Dr. Lanwermeyer of the Abbott Laboratories. Dr. Lanwermeyer, of the Abbott Laboratories, in conjunction with Parke, Davis & Company, worked out a process by which the oil of the halibut liver could be extracted and used for its high vitamin A and D content.

The history of the "Haliver Oil" was discussed from the beginning of research work to the finished product.

A résumé of the discovery and use of vitamins was given. The vitamins were first thought to be amines, but it now is known that they are not amines.

During the early use of cod liver oil in the European countries the benefits derived from its use were supposed to come from the small amount of iodine that it contained. This was disproved, however. Various theories were propounded as to the cause for its known therapeutic value.

In 1919 two individual active substances were separated. They were called vitamins A and D. Up until last January the chief source of both vitamins A and D was cod liver oil.

In 1929 research workers were able to radiate a sterol and produce vitamin D. The vitamin D was now given in drop doses, but not the vitamin A, so a source of vitamin A that could be given with D in drop doses was looked for. The result is halibut liver oil, known to the public as "Haliver Oil."

Vitamin D seems to work synergistically with vitamin A, hence the desire to administer the two vitamins in the same preparation.

Halibut liver oil contains from 100 to 200 times the vitamin A units of cod liver oil and from 15 to 20 times the vitamin D units.

The Abbott Laboratories and Parke, Davis & Company started to work on halibut liver oil at about the same time, so they decided to pool their research work, a commendable action by two large competitive pharmaceutical houses. They found that the oil from the halibut liver could not be extracted as easily as the oil from the cod liver. Cod liver oil is extracted simply by the use of steam, while the oil from the halibut liver must be extracted by the use of a solvent.

Trouble was experienced in procuring true samples of halibut livers, so Dr. Lanwermeyer was delegated to spend a summer off the coast of Alaska with the fishermen to supervise the salvaging of the livers. He gave us a very interesting story of his experiences as a deep sea fisherman.

The halibut weigh from 20 to 400 pounds. They are caught on the bottom of the ocean at a depth of about 1500 feet. The liver weighs about 1% of the body weight and contains about one-half as much oil as the cod liver. The theory is that the halibut has just as much vitamin A and D stored up as the cod, but they are more concentrated.

The livers were packed in ice and shipped to Chicago and Detroit, where the extracting is done and the vitamin content is adjusted. The oil is placed on the market in 5-cc. and 50-cc. bottles and in an elastic capsule. The oil in the capsule is diluted with a vegetable oil so that a larger, more accurate 5-minim capsule can be made.

The large group of members and visitors gave Dr. Lanwermeyer a standing vote of thanks for his exceptionally vivid presentation of the subject.

LAWRENCE TEMPLETON, *Secretary.*

NEW YORK.

The meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION to discuss the Proposed Deletions from the United States Pharmacopœia was held on Monday, November 14th, at the College of Pharmacy, Columbia University. About 100 pharmacists were present.

Owing to the length of the program, the minutes of the last meeting were taken as read.

Chairman Lehman, of the Committee on Education and Legislation, reported that the matter concerning the Hewitt Laboratories' advertising, which was discussed at the last meeting, had been turned over to the executive secretary of the New York Pharmaceutical Conference. Referring to national legislation, he said that there was some possibility of the Capper-Kelly Bill being brought up at the short session of Congress.

Dr. Mayer, for the Audit Committee, reported that he had passed on all bills submitted to him.

Chairman Miller, of the Membership Committee, presented the names of A. Margulis, C. Silkes and B. Lichtenstein for membership in the Branch; these were approved.

President Fischelis introduced Chairman E. Fullerton Cook, of the U. S. P. Revision Committee, who had been invited to address the meeting on the subject of the deletions.

Professor Cook said that he would speak as the chairman of the Revision Committee and would consider the subject as a whole rather than give the point of view of the Committee on Scope. He stated that New York had always taken part in the making of the Pharmacopœia and referred to the three-day journey of Lyman Spalding, the father of the Pharmacopœia, from New York to Washington in 1820, to attend the Pharmacopœial Convention. He invited all present to express their opinions very frankly and to submit them in writing to the Revision Committee.

Professor Cook then continued in part, as follows:

"The services of the United States Pharmacopœia are varied, but it was founded by physicians, primarily for physicians, and all other services, while of themselves important, are only incidental and only of value to the degree to which the Pharmacopœia carries out its first function.

"For the physician it should provide a list of selected and therapeutically useful and reliable medicinal agents of established strength and

purity. It should also provide official titles under which these substances may be identified and prescribed.

"If the Pharmacopœia fails to meet this objective, and if it does not receive the approval and have the confidence of the medical profession, its publication is useless.

"The U. S. P. of 1820 set as its first requirement for admission that the substance 'possess medicinal power,' the U. S. P. Convention of 1930 re-adopted the principle that any substance to be admitted to the U. S. P. XI must be 'therapeutically useful,' and by this standard must the reputation and the value of the Pharmacopœia be measured by the physician.

"There is a second specification, namely, that the 'utility of those substances admitted must be fully established and best understood' (1820) or that it be 'sufficiently used in medical practice within the United States' (1930). This is again a limiting principle but this is definitely qualified by the first requirement, namely, that its medicinal importance must be fully established.

"The import of all of this would seem to be that the Pharmacopœia of any decade stands or falls to just the degree to which it conforms to the needs of the medical profession of that period.

"Can the Pharmacopœia hope to retain its peculiar status as an authoritative list of therapeutic agents if it does not periodically eliminate those substances which have become obsolete or which can be replaced by newer therapeutic agents of greater efficiency?

"In every decade there are certain to be differences of opinion concerning the items considered worthy of admission to the Pharmacopœia, for the decision must be based upon different kinds and degrees of knowledge and experience. However, the present Sub-Committee on Scope is making an earnest effort to obtain the facts controlling admission, from the widest possible field, and their final recommendations may represent the mature judgment of those best qualified to express an authoritative opinion on the question.

"I am taking the liberty of quoting from a letter recently written by a prominent pharmacist concerning the question of the proposed deletions from the U. S. P. X. He expresses a viewpoint which is worthy of thoughtful consideration by every pharmacist interested in prescription filling. He writes:

" 'I realize that at times we pharmacists have taken the attitude that we are being deprived of something when a product at one time in wide use and possibly still used to a considerable extent is deleted from the U. S. P., but I am not so sure we are seeing clearly when we take that attitude. Recognition in the U. S. P. gives the product a certain amount of standing and prestige. To perpetuate this for products unworthy of it would probably be unwise, because it would ultimately damage the reputation of other drugs recognized in the Pharmacopœia and it would also be likely to unnecessarily increase the variety of products which the pharmacist has to carry, be familiar with and either produces himself or obtains through manufacturers. In view of the much greater scrutiny exercised by Federal departments over the quality of drugs available in the market to-day, it is particularly to the advantage of all of us who are interested in pharmacy to eliminate from use products which are unstable, provided of course that equally satisfactory therapeutic agents of a stable variety are available. Where the latter is not the case, we have to do the necessary research work to learn how to either stabilize or satisfactorily replace the unstable material. It, further, would appear that in view of the very broad training that a medical student has to receive under present-day conditions there is a distinct advantage in not unnecessarily multiplying the number of remedial agents. These serve definite and useful therapeutic purposes, as a physician who knows a limited number of drugs well and understands what can be accomplished by them will certainly be a very much better prescription writer and use these drugs more than a physician who has an insufficient knowledge about a great many drugs so that he does not know how to satisfactorily use any of them and because of this does not get the results and is led into methods of treatment which may not be entirely satisfactory. Thus he unfairly eliminates the use of drugs from his practice to a degree not warranted. I believe that the retail pharmacist and all others connected with pharmacy will profit from a more limited number of good drugs recognized by the U. S. P. and N. F. than if too great a variety of drugs is recognized including some products of doubtful stability and value.'

"The present plan of revision would seem to offer unusually fair and unbiased conditions for establishing this basis of judgment. The program which is being carried through for deciding this question is as follows:

"1. The 'Sub-Committee on Scope,' made up of the 18 physicians on the Committee of Revision and 5 of the pharmacists, was appointed when the General Committee was organized.

"2. Every title in the U. S. P. X was read in a personal conference of the Scope Sub-Committee, and all titles receiving unanimous approval were immediately admitted to the U. S. P. XI. Over 350 titles were included at this first meeting which followed immediately after the close of the Convention.

"3. The remaining titles were then arranged in groups of about thirty titles each and submitted to the Sub-Committee for discussion, then the full discussion on each title was sent to the Sub-Committee members and a vote called. All titles receiving at this time a two-third vote (16 votes) for either admission or deletion were considered settled.

"4. The titles not receiving a two-third vote in this second consideration were re-submitted for discussion, the detailed arguments and references to previous discussions were once more sent to the members and a vote taken. In this vote, a majority of the members of the Sub-Committee (12 or more) was accepted as a decision, either for admission or deletion.

"5. The titles not settled by this third consideration were once more re-submitted by mail for discussion and the new comments on each title issued in the Bulletins, but the vote was not taken until the Sub-Committee was called into personal conference when they were again discussed and a new vote taken. On this fourth vote, a majority (12 votes) was necessary to decide. Two such personal conferences have been held during the past year.

"6. The next step is now under way. Those titles of the U. S. P. X not receiving a majority of votes in the Sub-Committee on Scope for admission to the Eleventh Revision have been submitted to the physicians and pharmacists of the country for review. In carrying out this plan such a meeting as is held here to-night is very helpful."

(Chairman Cook gave assurance that any recommendations or criticisms sent to the office of the General Chairman will be placed before the members of the General Committee of Revision and of the Sub-Committee on Scope and that the Sub-Committee will give further consideration to every recommendation. Such comments should be specific; general statements are not helpful. He then explained factors in determining admissions to the Pharmacopœia.)

(For want of space in this issue of the JOURNAL the following is given in a condensed form—*the first figure* represents the number of times used in 10,000 prescriptions. The Sub-Committee on Scope is made up of 18 physicians and 5 pharmacists—the numbers following *the first figure* represent the vote on deletions; the first number is favorable for retention, the second for deletion.)

Fldext. Buchu[1] 2. 4–17. Calc. Glycerophos. 7. 6–13. Cinchonid. Sulph. 14. 4–16. Ext. Colocyn. 9. 4. Elaterin 1.1. 8–12. Ferr. Carb. Sacch. 21.4. 4–16. Ferr. Phos. Sol. 2.9. 9–11. Ferr. Sulph. Exsic. 1.8. 6–14. Fldext. Scill. 1.7. 0–19. Glycer. Phenol. 11.4. 0–18. Guaiacol Carb. 28.7. 2–18. Hydrarg. Iod. Rub. 6. 4–16. Inf. Dig. 4–14. Liq. Arsen. et Hydrarg Iod. 2–18. Liq. Ferr. et Ammon Acet. 22. 3–15. Liq. Plumb. Subacet. 6. 5–15. Liq. Pot. Arsen. 73, deletion apparently unanimous. Liq. Pot. Cit. 4.7. 1–15. Tinct. Lobel. 11.2. 5–15. Mist. Glycyrrh. Co. 89. 0–16. Morph. Hydrochl. 6. 0–16. Ol. Tigl. 1. 2–14. Pilocarpin. Hydrochl. 21.5. 2–18. Quin. Hydrochl. 11. 6–10. Stront. Salicyl. 11. 3–17. Tinct. Cinch. 2. 5–14. Ung. Plumb. Ol. 3.7. 3–12.

Chairman Cook discussed the services the Pharmacopœia may render, its place in laws, to protect the public from injudicious use of active medicinal substances, and as a formula book. He referred to working formulas in the Pharmacopœia and cited Solution of Magnesium Citrate as an example—that all pharmacists did not take advantage of the opportunities offered by the Pharmacopœia for manufacturing.

He closed by remarks on extending the use of pharmacopœial medicinals and invited coöperation in the following words:

"Physicians and pharmacists are invited to coöperate in this effort to produce in our next Pharmacopœia a standard and guide of the greatest value to every interest concerned. Its foundation must be established in scientific truth, the best our research age has produced, and its objective must primarily be the benefit of the sick and the maintenance of health. Such a position shall be unassailable and cannot but advance the interest of every one unselfishly aiding in its promotion."

[1] Explanation: Fldext. Buchu, used twice in 10,000 prescriptions; 4 favorable for retention, 17 for deletion.

The president thanked Professor Cook for his instructive address.

President Walter A. Bastedo, of the U. S. P. XI Pharmacopœial Convention and a member of the Sub-Committee on Scope, was called upon to give his opinion, as a medical man, on the proposed deletions. He said that Chairman Cook had given the views of the medical men on the Sub-Committee on Scope very fairly indeed. He wanted to hear what the pharmacists at this meeting had to say about the deletions. Medical men felt that the Pharmacopœia should represent the authoritative opinion of medical men of to-day in the selection of medicinal agents. Dr. Bastedo said that the pharmacist dealt with three classes of preparations: (1) those recognized as best of their class by the highest medical authorities; these should be included in the U. S. P.; (2) those prescribed but not included in the U. S. P.; these should be taken care of in the N. F.; (3) those not prescribed but called for by the laity; these could be contained in the Recipe Book. He said that what was wanted was that physicians should prescribe things that required compounding in a pharmacy and he stressed the point that the U. S. P. was the book from which professors of medicine taught their students about medicinal substances, which had been selected by the U. S. P. with a great deal of care and on the highest authority; if medical men knew the U. S. P. they would write prescriptions. If the idea that the U. S. P. represented the highest thought was taken away, medical men would at once lose faith in it and teachers would fail to teach it.

President Fischelis thanked Dr. Bastedo and called upon J. Leon Lascoff, a pharmacist on the Sub-Committee on Scope, to present his paper.

Dr. Lascoff said that on the list sent out by Dr. Arny are 108 items proposed for deletion; he had voted for a majority of them for retention. The Committee has been guided in its work by two principles: Therapeutic usefulness, and pharmaceutic necessity. He named a number of items retained for these qualifications. Of the 108 items on Dr. Arny's list, in his opinion at least the following chemicals and galenicals should be retained: Calcium glycerophosphate, saccharated ferrous carbonate, guaiacol carbonate, red iodide of mercury, infusion of digitalis, solution of iron and ammonium acetate, solution of potassium arsenite, quinine hydrochloride, strontium salicylate, syrup of senega, tincture of strophanthus, ammoniated tincture of valerian, lead oxide, ointment of lead oleate, fluidextract of rhubarb, compound glycyrrhiza mixture. He mentioned that among the preparations recommended for deletions are a number of preparations that have been in the Pharmacopœia since the beginning. In his opinion all preparations of the list should be retained. He referred to the New York survey published in the JOURNAL A. PH. A. for March, 1932.

Dr. Lascoff hoped that under the chairmanship of Professor Cook the U. S. P. XI would be the best ever published, and that a number of those scheduled for deletion will be retained.

At this point on the program, Dr. H. V. Arny, a member of the U. S. P. Revision Committee, and Dean of the Columbia University College of Pharmacy, who had originated the idea for the meeting and had circularized a questionnaire concerning the Proposed Deletions, was called to the platform to give a summary of the replies to his questionnaire.

Dr. Arny said: "Before I give my results, I should like to say, concerning the list of proposed deletions, that it has already produced some surprise on the part of pharmacists, not only because of its length but also because of the fact that many old-time pharmaceuticals are sentenced to 'walk the plank.' What I say now is intended as a neutral presentation of facts and I shall not therefore single out any of the list of deletions for personal comments.

"Perhaps it is true, as our medical friends of the Sub-Committee on Scope claim, that the deleted preparations represent now repudiated phases of therapeutics. Perhaps the oft-repeated statement, 'These will go into the N. F. anyway,' is a sound and logical way to view the situation. Perhaps the experience of the practical retail pharmacist is that the preparations proposed for deletion are becoming obsolete. To these statements, I will, at this time, say neither 'yea' nor 'nay' although I have very strong personal views as to some items on the list of proposed deletions. At this time, as a member of the U. S. P. Revision Committee from the New York district I consider that I am possessor of a grave responsibility toward my constituents, the retail pharmacists of Greater New York."

The results of the questionnaire were now given by Dr. Arny in tabulated form, based on 92 returns on the list of 108 proposed deletions.

(The list represented is before the N. F. Committee for consideration.)

Dr. Arny concluded by reading the comments that were sent in with the replies to the questionnaire; these came from some of the largest prescription pharmacies in New York City, neighboring cities of New Jersey and from outlying points on Long Island, and upstate New York. Twenty of the comments showed strong disapproval of a number of the proposed deletions and three favored all the deletions in general terms.

The next speaker, Dr. Eugene F. DuBois, a member of the Council on Pharmacy and Chemistry of the American Medical Association, spoke on the deletions from the physician's point of view. He said that he had only seen four of the items on the list used in teaching the internes of the New York Hospitals, among these being Fowler's Solution, Brown Mixture and Jalap; he referred to the use of powdered Digitalis in place of preparations of the drug. He mentioned the fact that he was a member of a committee which had recently revised the New York Hospitals' Formulary and that, having gone through formulary revision in miniature, he had the deepest sympathy for the Committee on Scope.

Before opening the meeting for general discussion, President Fischelis read the following extract from a letter from Chairman Gathercoal, of the Committee of Revision of the N. F. "We have already laid this list of 108 deleted U. S. P. items before the N. F. Committee, asking them for an expression of opinion as to which should be admitted to the N. F. Answers so far received would indicate that quite a good many are not favored, even for the N. F. I should like to lay the results of the Arny questionnaire before the N. F. Committee."

Dr. William C. Anderson, a member of the State Board of Pharmacy and dean of the Brooklyn College of Pharmacy, said that, in regard to the deletions, it had been suggested that they should be transferred to the N. F. but he did not consider this satisfactory. He mentioned the fact that medicinal items, in increasing numbers, were sold on news-stands and said that present tendencies might take away the right under the law to confine the sale of certain items to the drug store. He felt that the physicians on the Sub-Committee on Scope were encouraging self-medication by their policy of deleting so many items from the Pharmacopœia at each revision. He said that the Pharmacopœia was instituted for the protection of the public and that deletions were taking away the standards for the drugs; he would like to ask the question, "Can any harm be done by leaving the items proposed for deletion in the next Pharmacopœia?" In closing he said that he felt that a most serious time had been reached and that the revisers of the Pharmacopœia should listen to the voice of the pharmacists of the country.

Mr. Seley spoke against the deletion of several of the items on the list and mentioned the large prescription demand for Infusion of Buchu in his pharmacy.

Secretary Kassner said that it was claimed by the medical men on the Sub-Committee that "the deleted preparations represented repudiated phases of therapeutics" and that "the Pharmacopœia should only contain the reliable pharmaceutical agents of our time;" in connection with this it was interesting to note that, of the proposed U. S. P. deletions, there were 46 identical or equivalent items included in the New British Pharmacopœia which had just become official for the British Empire; also that of 25 proposed admissions to the U. S. P. 11 were contained in the B. P. 1932. He suggested that the new U. S. P. should contain, like the new B. P., a standardized Powdered Digitalis (No. 20 powder) which could be made into capsules by the retail pharmacist; also an antiseptic solution which should be the equal of, or superior to, any proprietary article of its kind.

Mr. Kopald said that this was an age of mass production and the deletions from the Pharmacopœia seemed to have been carried out on this scale and that he could not see how pharmacists could make an effective stand on the deletions when they were outvoted on the Committee on Scope in the ratio of 18 physicians to 5 pharmacists. He spoke strongly against the deletion of a number of items.

Dr. Mayer pointed out that the assay for Fowler's Solution and Donovan's Solution should also contain the estimation of total arsenic present.

Prof. H. Raubenheimer said that he had studied the Gathercoal and St. Louis Drug Surveys and had found deductions made from them misleading; he would like to know whether there was always a drug to take the place of one deleted from the Pharmacopœia. He urged pharmacists to detail physicians on U. S. P. and N. F. items.

Pharmacist H. Bischoff, of the Hudson

County Hospital of New Jersey, said that a few years ago he brought to the attention of the hospital authorities the fact that they could save money by prescribing U. S. P. preparations rather than proprietary items; he, in coöperation with the medical staff, had produced a highly endorsed formulary of U. S. P. and N. F. preparations. He stressed the point that a doctor was taught how to prescribe when he was an interne and if pharmacists were interested in increasing the writing of prescriptions, they should concentrate their U. S. P. and N. F. propaganda upon the hospital internes.

Mr. Heimerzheim spoke of the work of the Kings County Pharmaceutical Society on U. S. P. and N. F. propaganda during the last 25 years; he found that a large number of Brooklyn physicians welcomed the help and information that was given; he further said that he had had many letters from physicians saying that the medical societies should be active in promoting the use of U. S. P. and N. F. remedies. He hoped that at least the first 38 items, as tabulated in the Arny questionnaire, would not be deleted. (The first 38 items of the questionnaire, together with the number representing those of the 92 reporters in favor of retention, follow: Mist. Glycyrrh. Comp., 85; Liq. Potas. Arsenitis, 84; Liq. Ferr. et Am. Acet., 82; Infusum Digitalis, 81; Linimentum Calcis, 69; Guaiacolis Carbonas, 68; Pil. Hydr. Chlor. Mit., Co., 65; Syrupus Scillæ Co., 60; Fluidext. Senegæ, 57; Syrupus Senegæ, 57; Fluidext. Rhei, 54; Tinct. Valerian. Amm., 54; Tinct. Lobeliæ, 53; Fluidext. Hydrastis, 52; Pilocarpine Hydrochlor, 51; Quininæ Hydrochlor., 51; Liq. Plumbi Subacet., 48; Fluidext. Belladonnæ, 47; Tinct. Strophanthi, 47; Syrupus Rhei, 47; Buchu, 46; Ferri Carbonas Sacch., 46; Fluidext. Hyoscyami, 44; Quininæ Hydrobromid., 44; Fluidext. Scillæ, 43; Tinct. Cinchonæ, 43; Liq. Potass. Citratis, 41; Calcii Glycerophosph., 40; Liq. Arsen. et Hydr. Iod., 39; Fluidext. Buchu, 38; Ferri Sulphas Exsicc., 37; Tinct. Rhei, 37; Hydrastis, 35; Hydrar. Iodid. Rubrum, 34; Fluidext. Colchici (Sem), 31; Ferri Phosph. Solub., 30; Fluidext. Cinchonæ, 30; Strontii Salicylas, 30.)

Dr. O. Raubenheimer spoke against the deletion of Rhubarb preparations in particular and said that Carron Oil was used by the gallon in the treatment of sunburn. He felt that the surveys of Ebert—1885, Hallberg—1895, Hallberg-Snow—1909, Charters—1927 and Gathercoal—1931, which were being used by the Revision Committees were faulty since they pertained to prescription use only and not to counter sale, and that no statistical data were being used regarding the retail sale of such items as Compound Cathartic Pills and Brown Mixture, for which there was a large demand at the counter. He urged that standards for drugs or their preparations that were once official in the Pharmacopœia should persist after they were deleted, and these should be enforced by the U. S. Food and Drug Administration; this was the only way in which the general public could be protected and assured of products of quality.

Professor Cook replied to many of the questions that had been raised during the general discussion and mentioned the names of a number of trade-marked items which the Revision Committee was considering for the Pharmacopœia. In conclusion he read a statement from the U. S. P. of 1820 in which the policy of the Pharmacopœia was outlined.

Professor Canis moved that a rising vote of thanks be given to Professor Cook, Dr. Bastedo, Dr. DuBois, Dean Arny, Dr. Lascoff and others who took part in the meeting; this was seconded and carried.

HERBERT C. KASSNER, *Secretary.*

PHILADELPHIA.

The November meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held on Tuesday evening, November 15, 1932, at the Philadelphia College of Pharmacy and Science, Philadelphia.

The meeting was called to order at 8:30 P.M. and the reading of the minutes of the October meeting was waived, due to previous publication. It was with pleasure that the announcement was made at this time of the appointment of Dr. H. E. Kendig, Dean of the School of Pharmacy of Temple University, to the local branch Committee on Professional Relations.

President Stoneback introduced Dr. Henry Arnstein, well-known consulting chemist, industrial engineer and international authority on the production of industrial alcohol, as guest speaker. Dr. Arnstein's lecture was entitled "Alcohol" but as he aptly put it, might have been called "Prosperity," "Farm Relief" or "Unemployment Relief" with equal justice.

During the lecture Dr. Arnstein brought out a series of startling statements, among which were the following: He stated that

the economic situation could be solved by consideration of the alcohol question, in the diversion of surplus crops from the table to the production of commercial alcohol. He cited various industries and products requiring alcohol, with especial emphasis on the use of alcohol as a motor fuel; stating that alcohol was the safest, cheapest and most efficient motor fuel that could be produced.

He mentioned numerous countries where the use of alcohol as a motor fuel was required by law, and presented information as to how these countries were relieving their economic situations with the production of commercial alcohol.

"Alcohol," he said, "can be produced and sold at an extremely low cost because of the value of its by-products, such as carbon dioxide gas and dry ice." He further stated that the world's surplus crops could be used through fermentation to manufacture such valuable commodities as Ether, Bakers' Yeast, Glycerin, Acetone, Butyl Alcohol and Citric Acid.

After the lecture two reels of motion pictures were shown, depicting the production of industrial alcohol, and Dr. Arnstein made enlightening comments from time to time regarding the processes used.

The meeting was then thrown open for discussion, and Dr. Arnstein was questioned by Doctors LaWall, Wood and Munch.

E. H. MacLaughlin, *Secretary.*

PITTSBURGH.

A meeting of the Pittsburgh Branch of the American Pharmaceutical Association was held November 15, 1932, at the Pittsburgh College of Pharmacy.

The meeting was called to order by President John H. Wurdack; sixty-five members and guests were present.

The speaker of the evening was Dr. George D. Beal, Assistant Director of the Mellon Institute for Industrial Research. He considered the "Industrial Fellowship System at the Mellon Institute." Dr. Beal indicated how the Mellon Institute had its beginning and paid respect to the late Dr. Robert Kennedy Duncan, who was the man with the high ideals that brought this close contact between pure and applied science. Dr. Beal considered "the work that is being done at the Mellon Institute at the present time," and told how the Industrial Fellow proceeds with his investigation. He concluded his very interesting talk with a consideration of "what they expect to do in the future at the Mellon Institute."

A fine new building is nearing completion in Pittsburgh in which the activity of the Mellon Institute will proceed. A lasting impression was made by the speaker when he demonstrated the growth of this institution from one fellowship to a present-day matter of fifty-five to sixty-five fellowships.

Advances in Pharmacy are dependent upon the findings and discoveries of such expert research workers as Dr. George D. Beal, and his "fellows in Pharmacy" await with interest his further contributions.

F. S. McGinnis, *Secretary.*

Under the faculty advisorship of **Miss Alice Esther Garvin,** lecturer in English, Phi Sigma Chi, a new sorority, has recently been organized at the Connecticut College of Pharmacy. The members have among their aims active coöperation with their fellow-students, favorable publicity for pharmacy as a profession, and the advancement of pharmaceutical research outside the college. The constitution and by-laws of the new sorority are based, in the main, upon the ideals of the American Pharmaceutical Association as set forth in its constitution.

U. S. P. AND N. F. PHARMACY WEEK MESSAGE GOES TO SOUTH DAKOTA PHYSICIANS.

A set of sixteen cards bearing information about forty-eight useful U. S. P. and N. F. preparations, together with a letter urging closer coöperation between physicians and pharmacists, was sent to every physician in South Dakota during Pharmacy Week. This mailing was made possible by the efforts of the South Dakota Pharmaceutical Association and the Northwest Pharmaceutical Bureau.

Pharmacists were urged by members of the Interprofessional Relationships Committee to add their personal support to these efforts by calling upon physicians personally, telling them of the services their stores may render.

Secretary J. G. McBride, of Nebraska Pharmaceutical Association, has been elected to the State Legislature.

Dr. John C. Krantz, Jr., has been elected president of the Biological Society of the University of Maryland.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1932–1933.

Office of the Secretary, 10 West Chase Street, Baltimore, Md.

LETTER NO. 4.

December 17, 1932.

33. Election of Members. Motion No. 6 (Council Letter No. 3, page 1254) has been carried and applicants numbered 9 to 27, inclusive, are declared elected.

34. Local Secretary for the 1933 Meeting. As no other nominations have been received (see Council Letter No. 3, page 1254) a vote is called for on the following motion.

(*Motion No. 7*) *It is moved by Kelly that Mr. Emerson Stanley be elected Local Secretary for 1932–1933.*

35. Time and Headquarters for the 1933 Meeting. In Council Letter No. 3, page 1254, the time proposed for the meeting was given as August 29 to September 3, 1933. A check of the calendar shows that the correct dates for this week are August 28 to September 2, 1933.

A vote is called for on Motion No. 5 (see Council Letter No. 3, page 1254) with the change in dates above mentioned.

36. Election of Officers. The following communication has been received from the Board appointed by President Philip to canvass the vote in the recent mail ballot for the election of officers for 1933–1934:

"The Board of Canvassers upon tallying the votes find that the election has resulted as follows:

For *President:* Robert L. Swain.
For *First Vice-President:* Robert P. Fischelis.
For *Second Vice-President:* John C. Krantz.
For *Members of the Council:* H. V. Arny, H. C. Christensen, W. D. Adams.

Respectfully submitted,
W. Paul Briggs, *Chairman;* Morris Goldstein; Walter S. Nicklin."

and those elected have been notified. Professor Briggs is dean of the School of Pharmacy, George Washington University, Washington. Messrs. Goldstein and Nicklin are retail pharmacists of Washington and Alexandria, Va., respectively.

37. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received.

No. 28, Maurice Appel, 25 Theodore St., Dorchester, Mass.; No. 29, Helen Austin, Box 794, College Station, Pullman, Wash. (Assoc.); No. 30, H. Brunelle, Jr., Cor. Elm & Westfield St., W. Springfield, Mass.; No. 31, C. Jelleff Carr, 2201 Hamilton Ave., Baltimore, Md.; No. 32, John A. Criswell, 702 Campus, Pullman, Wash. (Assoc.); No. 33, Harold Crooks, 303 W. 80th St., Apt. 6-E, New York, N. Y.; No. 34, George H. Densow, 621 Grand Ave., Pullman, Wash. (Assoc.); No. 35, Elizabeth Fleming, 804 Linden Ave., Pullman, Wash. (Assoc.); No. 36, Milton H. Fulmer, S. P. E. House, Gainesville, Fla. (Assoc.); No. 37, Elsie Doreen Hinchliffe, Box 622, College Sta., Pullman, Wash. (Assoc.); No. 38, George M. Hocking, University Sta., Gainesville, Fla. (Assoc.); No. 39, Hmayag H. Hmayan, American University of Beirut, Beirut, Lebanon, Syria; No. 40, J. C. Kimmel, 701 Linden Avenue, Pullman, Wash. (Assoc.); No. 41, Edna Lampa, College Station, Pullman, Wash. (Assoc.); No. 42, Paul Nicholas Leech, 535 N. Dearborn St., Chicago, Ill.; No. 43, Charles Liekerman, 6224 Fourth Ave., Brooklyn, N. Y.; No. 44, Ross J. Marano, 4428 Furman Ave., Bronx, New York, N. Y.; No. 45, Earl F. McClelland, 59 W. Banta St., Franklin, Ind.; No. 46, Earl F. Metcalfe, 1914 Nicollet Ave., Minneapolis, Minn.; No. 47, Arthur Ralph Miller, College Station, Pullman, Wash. (Assoc.); No. 48, John A. Mitchell, 1732 University Ave., Gainesville, Fla. (Assoc.); No. 49, Sarah Evelyn Pullar, Box 254, College Sta., Pullman, Wash. (Assoc.); No. 50, Donald Edwin Riley, University of Florida, Box 16, Ph.-Chem. Bldg., Gainesville, Fla. (Assoc.); No. 51, William A. Robinson, P. O. Box 511, Eric and Division Sts., North Tonawanda, N. Y.; No. 52, Joseph Schneider, 3700 Eastern Ave., Cincinnati, Ohio; No. 53, Janice Sourwine, 904 Thatuna St., Pullman, Wash. (Assoc.); No. 54, Alice Swanson, Box 531, College Station, Pullman, Wash. (Assoc.); No. 55, Queena Belle Thomas, Box 583 College Station, Pullman, Wash. (Assoc.); No. 56, L. H. Turner, 625 Sherwood Road, N. E.,

Atlanta, Ga.; No. 57, John S. Vaughn, P. O. Box 83, High Springs, Fla (Assoc.); No. 58, Walter R. Williams, 150 York St., New Haven, Conn.; No. 59, Clarence William Woods, 1015 S. 13th St., Springfield, Ill.

(*Motion No. 8*) *Vote on applications for membership in the American Pharmaceutical Association.*

E. F. KELLY, *Secretary.*

DRUGGIST LEGIONNAIRES.

Chicago Retail Druggists' Post No. 575, American Legion, whose membership is composed exclusively of pharmacists, and most of them, members of the Chicago Retail Druggists' Association, solicits and invites correspondence with other similar Posts, if there be such. Or, Posts whose membership is largely composed of pharmacists and members of any related professions.

We would like to interchange ideas and welfare practices, to the end that we may function more usefully in our respective communities.

Our headquarters are the same as that of the C. R. D. A., Room 820, 32 W. Randolph St., Chicago, Illinois.

(*Signed*) MAURICE SICKEL, *Commander.*

Dr. John C. Krantz, Jr., is now professor of Pharmacology in the School of Medicine, University of Maryland.

Governor A. Harry Moore has appointed **Robert P. Fischelis,** secretary and chief chemist of the Board of Pharmacy of the State of New Jersey, a member of the State Educational Survey Commission. The duties of the Commission are to survey the educational system of the State and to propose recommendations for an essential program of modern education and methods of financing it. The Commission includes the State Commissioner of Education, a number of school superintendents and principals and a number of prominent laymen, all of whom will serve without pay. President Thomas N. McCarter, of the Public Service Corporation of New Jersey, is the chairman of the Commission and Albert Payson Terhune, the well-known author, is one of the members.

Dr. Edward H. Cary, president of the American Medical Association, spoke to the student body of the Medical College of Virginia, on a recent visit to Richmond. He was one of the principal speakers at the dedication of the new home and library of the Richmond Academy of Medicine.

The Council on Pharmaceutical Education has been established, designed to set up standards for schools of pharmacy; the *chairman* is Secretary E. F. Kelly, of the AMERICAN PHARMACEUTICAL ASSOCIATION, and the *secretary* is Dean A. G. Dumez, of the School of Pharmacy, of the University of Maryland. The bodies represented in the organization are: The AMERICAN PHARMACEUTICAL ASSOCIATION, the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy.

The new laboratory created at the Faculté de Pharmacie de Paris will be under the direction of Professor Perrot, member of the Academy of Medicine, and will be devoted to research on plant life. The laboratory has been equipped with the aid of a governmental appropriation, together with more than $24,000 contributed largely by the alumni of the École de Pharmacie and the large manufacturers of pharmaceutic specialties and chemical products. The laboratory was opened by the Minister of Public Instruction at ceremonies attended by the rector of the University of Paris, and by the present dean and former deans of the Faculté de Pharmacie. Professor Perrot is an honorary member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

BORIC ACID POISONING.

The mistake of a nurse, of four years' experience, who dispensed a 2% boric acid solution instead of normal salt solution which was administered, December 15th, to three infants in the New York Hospital—Cornell Medical Centre, caused their deaths, due to acute gastro enteritis and nephritis. Grand jury did not indict nurse of culpable negligence.

INFLUENZA.

The influenza which swiftly spread over the South and West by last week had filtered North and East. Surgeon General Hugh Smith Cumming estimated a quarter million cases in the country, up from 65,000 three weeks ago. But the disease this year is mild, kills few victims.

EDITORIAL NOTES

Editor: E. G. Eberle, 10 West Chase Street, Baltimore, Md.

OFFICERS-ELECT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The Board of Canvassers of the AMERICAN PHARMACEUTICAL ASSOCIATION have announced the results of the mail ballot for officers of the ensuing year. W. Paul Briggs is Chairman of the Board, and the other two members are: Morris Goldstein and Walter S. Nicklin. The officers-elect are: *President*, Robert L. Swain, Baltimore; *First Vice-President*, Robert P. Fischelis, Trenton, N. J.; *Second Vice-President*, John C. Krantz, Jr., Baltimore; *Members of the Council:* H. V. Arny, New York; H. C. Christensen, Chicago; Walter D. Adams, Forney, Texas. These officers will be installed at the Madison meeting of the ASSOCIATION.

OMISSIONS.

The inclusion of the Index and minutes makes it necessary to omit several departments and abridge others in this issue of the Journal.

NATIONAL DRUG TRADE CONFERENCE.

The National Drug Trade Conference convened in Washington, December 14th. Among the actions taken were: Urging the constituent members to follow measures in Congress relating to the drug industry, enactment of legislation prohibiting counterfeiting of drugs—S. 5149, introduced by Senator Copeland, seeks "to prohibit the counterfeiting of drugs, to provide penalties therefor, and for other purposes." The recent report of the Committee on Costs of Medical Care received consideration—the Conference received the statement of Ambrose Hunsberger, setting forth the understanding under which he signed the majority report of the Committee. Robert L. Swain reported on the establishment of a national council to work out standards for pharmaceutical education. He urged the study of the report and action to more closely ally the drug industry with the profession of pharmacy.

Chairman James H. Beal, of the committee charged with the preparation of a table of potent and toxic drugs, submitted a tentative list of substances for such a table. The list will be printed and distributed for criticism and comment. Philip I. Heuisler and S. L. Hilton described the progress of the study on the simplification of glass containers. Resolutions were adopted recommending to the Glass Manufacturers' Association that graduation marks be removed from prescription bottles and that tolerances suggested by the Committee be accepted for such containers and ointment jars.

Chairman A. C. Taylor reported on the uniform state narcotic act and recommended minor amendments to its provisions. P. I. Heuisler reported for the Committee on Endowments, Robert L. Swain reported on the status of pharmaceutical service in the U. S. Army. H. C. Christensen presented plans for pharmacy's participation in the World's Fair, and Dr. Cary of the Exposition staff—described the exhibit plans in the Hall of Science. E. F. Kelly reported on the progress made in correcting the misuse of the word "drug" and reference to the name of the drug in the press, when it has been misused for suicidal or other harmful purposes.

The following officers were elected for the ensuing year: *President*, Carson P. Frailey; *Vice-President*, Ambrose Hunsberger; *Secretary-Treasurer*, E. F. Kelly; *Counsellor to U. S. Chamber of Commerce*, S. L. Hilton. The officers are members of the *Executive Committee* and also the following: W. L. Crounse, Harry Noonan, Philip I. Heuisler, A. C. Taylor, A. G. DuMez, R. E. Lee Williamson.

OFFICERS OF THE NATIONAL ASSOCIATION OF INSECTICIDE AND DISINFECTANT MANUFACTURERS.

The officers of the National Association of Insecticide and Disinfectant Manufacturers met in New York City, December 12th. The following officers were elected for the ensuing year: *President*, Peter Dougan; *First Vice-President*, Charles P. McCormick; *Second Vice-President*, Samuel H. Bell; *Secretary*, H. W. Cole; *Treasurer*, John Powell. *Members of the Board of Governors* are: W. J. Anders, J. L. Brenn, H. W. Hamilton, F. A. Hoyt, Dr. George F. Reddish, Dr. C. H. Peet, Simon S. Selig, Dr. Robert C. White, W. J. Zick and Evans E. A. Stone.

OBITUARY.

JULIUS GREYER.

Julius Greyer, Life Member of the AMERICAN PHARMACEUTICAL ASSOCIATION, died October 10th in Deaconess Hospital, Cincinnati, aged 80 years. The deceased was chemist of the W. T. Wagner Sons' Company for about 40 years. He had been a retail pharmacist and for 15 years a member of the Ohio State Board of Pharmacy; also a member of the faculty of Cincinnati College of Pharmacy.

Mr. Greyer was also a veteran member of the American Chemical Society. He is survived by his widow, Mrs. Amalia Greyer, and a son, Paul W., of Webster Grove, Mo.

FRANCIS E. HOLLIDAY.

Francis E. Holliday, general representative of the National Wholesale Druggists' Association, and who had been associated with the drug business for the last sixty-five years, died November 19th, at his home in New York City. He was in his eightieth year, having been born December 22, 1852, at Wooster, Ohio.

The family moved to Des Moines, where Francis entered the retail drug business as an apprentice in the store of L. H. Bush. In 1878 he entered business as partner of William E. Swift in Topeka.

Mr. Holliday was active in the organization of Kansas Pharmaceutical Association and attended most of its annual meetings. He was elected its second president in 1882, and served on the Kansas State Board of Pharmacy for three years. He was active in the organization of the National Association of Retail Druggists and for a time was chairman of its executive committee. In 1898 he disposed of his business to become actively associated with the National Wholesale Druggists' Association. In 1907, he was elected general representative and, in 1915, its secretary. In recognition of his services, the Association, on the occasion of the 25th anniversary, presented Mr. and Mrs. Holliday with a specially arranged three-month tour of Europe, in 1925, and he was also elected honorary life member. He became a member of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1900.

Mr. Holliday was married in 1882 to Miss Adelaide Bosworth of Topeka, by whom he is survived, also by two children, Mrs. Howard H. Freudley and Terence Bosworth Holliday.

HENRY P. THORN.

Henry P. Thorn, one of Burlington county's best known and highly respected citizens, died at Medford, New Jersey, October 6th, of uræmic poison and complications. He was active in pharmaceutical, insurance and banking circles, and conducted for many years a drug store in Medford.

He was past-president of the New Jersey Pharmaceutical Association and president of the Burlington County National Bank of Medford.

A sketch of the deceased will be found in the April JOURNAL for 1931. He was born January 27, 1853, and had been engaged in pharmacy since 1870, and a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1879.

Mrs. Emma Rouse Lloyd, wife of our fellow-member and veteran past-president of the AMERICAN PHARMACEUTICAL ASSOCIATION, died November 28th, aged 74 years.

Mrs. Lloyd was a native of Boone county, member of a pioneer family of Kentucky, daughter of Hon. Thomas Rouse. In 1930 Professor and Mrs. Lloyd celebrated the 50th anniversary of their wedding.

Mrs. Lloyd was a member of the Daughters of the American Revolution; United Daughters of the Confederacy; Cincinnati Women's Club; the Garden Club of Cincinnati; was a life member of the Confederate Memorial Literature Society and of the Ohio and National Audubon Societies. She was also one of the founders of the Norwood Literary Club.

Very recently (August 1932) she published a limited edition of her book, "Clasping Hands with Generations Past," for presentation to her relatives and descendants. It contained a genealogical record of the branches of her pioneer family, of whom numbers took a leading rôle in the early military, political, educational and agricultural life of Kentucky.

REPORT OF THE COMMITTEE ON PATENTS AND TRADEMARKS.

BY F. E. STEWART, *Chairman.*

The chairman of your committee has been requested to state, with source of information, what is meant by "copyright." The following quotations from recognized authority will answer the question:

"Copyright (from the Latin copia, plenty) means, in general, the right to copy, to make plenty. In its specific application it means the right to multiply copies of those products of the human brain known as literature and art.

"There is another legal sense of the word 'copyright' much emphasized by several English justices. Through the low *Latin* use of the word *copia*, our word 'copy' has a secondary and reversed meaning, as the pattern to be copied or made plenty, in which sense the schoolboy copies from the 'copy' set in his copy-book, and the modern printer calls for the author's 'copy.' Copyright, accordingly, may also mean the right to copy (whether the original work or a duplication of it), as well as the right to make copies, which by no means goes with the work or any duplicate of it. Said Lord St. Leonards: 'When we are talking of the right of an author we must distinguish between the mere right to his manuscript, and to any copy which he may choose to make of it, as his property, just like any other personal chattel, and the right to multiply copies to the exclusion of every other person. Nothing can be more distinct than these two things. The common law does give a man who has composed a work a right to it at composition, just as he has a right to any other part of his personal property; but the question of the right of excluding all the world from copying, and of himself claiming the exclusive right of forever copying his own composition after he has published it to the world, is a totally different thing.' Baron Parks, in the same case, pointed out expressly these two different legal senses of the word copyright, the right *in* copy, a right of possession, always fully protected by the common law, and the right *to* copy, a right of multiplication, which alone has been the subject of special statutory protection." (*Copyright, Its Law and Literature*, R. R. Bowker.)

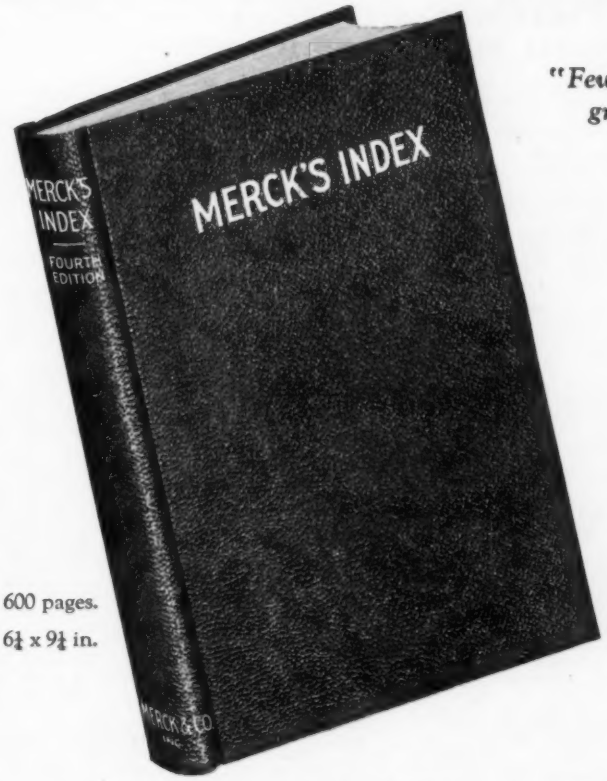
"But common law, while thus guarding from invasion on an author's well defined property rights in the form and style of his composition, ceases to protect an author once his works are made public." (*The New Universities Encyclopedia.*)

"Works to be copyrighted must first be published, with the claim to copyright printed thereon, and two copies (or only one if a foreign work) must be filed with the Copyright Office, Library of Congress, with an application for registration. Registration of any printed work costs a dollar, and the work is thereupon protected. The law confers upon persons complying with its provisions the exclusive right to print, reprint, publish, copyright and vend the copyrighted work, whatever it may be. It may relate to translations, the dramatizing of a narrative or novel or converting a drama into a story, or musical compositions. Such works can be copyrighted for 28 years from date of entry, and for a second term of the same length of time." (*The New Universities Encyclopedia.*)

"The copyright laws contain no provision under which protection can be obtained upon a mere name or title. Entry, therefore, cannot be made in the copyright office for coined names, names of articles of manufacture, names of substances, names of products or names of medicines." (Quotation from Circular No. 19, issued by the Librarian of Congress.)

THE CHEMICAL ASSAY OF THYROID GLAND.

In the British Pharmacopœia, 1932, thyroid is assayed (I) for total iodine; (II) for iodine in combination as thyroxine, and (III) for inorganic iodine. Evidence has been produced by Harington and Randall that the whole of the acid-soluble iodine is present as di-odo-tyrosine, while the whole of the acid-insoluble iodine belongs, in all probability, to thyroxine. G. Middleton now shows that the standardization of thyroid on a basis of acid-insoluble iodine content, requires only one determination of iodine. The method which he describes contains the essential details of the hydrolysis and precipitation as adopted by the Pharmacopœia, the precipitate being collected on a filter paper of 45-mm. diameter.—(*Analyst*, October, 1932, 603.)



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AMERICAN PHARMACEUTICAL ASSOCIATION
OFFICIAL ROSTER FOR 1932–1933

(Committees will be corrected as appointments are made by the President, A. PH. A., and Chairman of the Council, A. PH. A.)

OFFICERS OF THE ASSOCIATION.

President, W. Bruce Philip, Washington, D. C.
Honorary President, Charles F. Heebner, Toronto, Canada.
First Vice-President, Rowland Jones, Gettysburg, So. Dak.
Second Vice-President, G. H. Grommet, Miami, Fla.
Secretary, E. F. Kelly, 10 W. Chase St., Baltimore, Md.
Treasurer, C. W. Holton, Box 81, Essex Fells, N. J.
Editor of the Year Book, A. G. DuMez, Lombard and Greene Sts., Baltimore, Md.
Editor of the Journal, E. G. Eberle, 10 W. Chase St., Baltimore, Md.

THE COUNCIL.

Elected Members.—H. V. Arny, 115 W. 68th St., New York, N. Y. (1933); T. J. Bradley, 179 Longwood Ave., Boston, Mass. (1933); W. B. Day, 715 S. Wood St., Chicago, Ill. (1933); H. A. B. Dunning, Charles and Chase Sts., Baltimore, Md. (1934); S. L. Hilton, 1033 Twenty-Second St., N.W., Washington, D. C. (1934); Ambrose Hunsberger, 1600 Spruce St., Philadelphia, Pa. (1934); J. H. Beal, Fort Walton, Fla. (1935); C. E. Caspari, Euclid and Parkview Aves., St. Louis, Mo. (1935); C. H. LaWall, 214 S. 12th St., Philadelphia, Pa. (1935).

Ex-Officio Members.—W. Bruce Philip, 557 Munsey Building, Washington, D. C.; Rowland Jones, Gettysburg, S. Dak.; G. H. Grommet, 2364 S. W. 11th St., Miami, Fla.; E. F. Kelly, 10 West Chase St., Baltimore, Md.; C. W. Holton, Box 81, Essex Fells, N. J.; J. W. Slocum, 404 W. Ashland Ave., Indianola, Iowa; E. G. Eberle, 10 W. Chase St., Baltimore, Md.; A. G. DuMez, Lombard and Greene Sts., Baltimore, Md.

OFFICERS OF THE COUNCIL.

Chairman, S. L. Hilton, 1033—22nd St., N.W., Washington, D. C.; *Vice-Chairman*, Charles H. LaWall, 214 S. 12th St., Philadelphia, Pa.; *Secretary*, E. F. Kelly, 10 W. Chase St., Baltimore, Md.

COMMITTEES OF THE COUNCIL.

Committee on Finance.—*Chairman*, T. J. Bradley, C. H. LaWall, C. W. Holton.

Committee on Property and Funds.—*Chairman*, W. Bruce Philip, C. W. Holton, S. L. Hilton, T. J. Bradley, E. F. Kelly.

Committee on Publications.—*Chairman*, A. G. DuMez, H. V. Arny, C. H. LaWall, W. B. Day, E. G. Eberle, E. F. Kelly, C. W. Holton.

Committee on Standard Program.—*Chairman*, S. L. Hilton, T. J. Bradley, E. F. Kelly.

Committee to Confer with A. A. C. P. in Reference to A. Ph. A. Branches for Students.—*Chairman*, W. Bruce Philip, H. V. Arny, R. L. Swain.

Committee on Year Book.—*Chairman*, George D. Beal, Pittsburgh, Pa.; F. W. Nitardy, Brooklyn, N. Y.; H. W. Youngken, Boston, Mass.; E. N. Gathercoal, Chicago, Ill.; E. E. Swanson, Indianapolis, Ind.; W. T. McClosky, Washington, D. C.; J. C. Krantz, Jr., Baltimore, Md.

THE HOUSE OF DELEGATES.

Officers of the House.—*Chairman*, J. W. Slocum, 404 W. Ashland Ave., Indianola, Iowa; *Vice-Chairman*, P. H. Costello, Cooperstown, N. Dak.; *Secretary*, E. F. Kelly, 10 W. Chase St., Baltimore, Md.

COMMITTEES OF THE HOUSE OF DELEGATES.

Place of Meeting.—*Chairman*, T. J. Bradley, Boston, Mass.; R. A. Lyman, Lincoln, Neb.; W. F. Rudd, Richmond, Va.; C. G. Merrell, Cincinnati, Ohio; Laird J. Stabler, Los Angeles, Calif.

Patents and Trademarks.—*Chairman*, F. E. Stewart, Philadelphia, Pa.; S. C. Henry, Chicago, Ill.; F. W. Nitardy, Brooklyn, N. Y.; W. Bruce Philip, Washington, D. C.

THE SECTIONS.

Scientific Section.—*Chairman*, W. J. Husa, University of Florida, Gainesville, Fla.; *First Vice-Chairman*, F. E. Bibbins, 5840 Washington Blvd., Indianapolis, Ind.; *Second Vice-Chairman*, A. R. Bliss, Jr., Room 211P, 874 Union Ave., Memphis, Tenn.; *Secretary*, L. W. Rowe, % Parke, Davis & Co., Detroit, Mich.; *Delegate to the House of Delegates*, L. E. Warren, Bureau of Chemistry, Washington, D. C.

Committee on Ebert Prize.—*Chairman*, Heber W. Youngken, Boston, Mass.; L. E. Warren, Washington, D. C.; E. E. Swanson, Indianapolis, Ind.

Board of Review of Papers.—*Chairman*, L. W. Rowe, % Parke, Davis & Co., Detroit, Mich.; John C. Krantz, Jr., 2411 No. Charles St., Baltimore, Md.; F. J. Bacon, 2045 Adelbert Road, Cleveland, Ohio.

Committee to Coöperate with the National Conference on Pharmaceutical Research.—*Chairman*, John C. Krantz, Jr., 2411 N. Charles St., Baltimore, Md.; George D. Beal, Pittsburgh, Pa.; James C. Munch, Glenolden, Pa.

Committee on Monographs.—*Chairman*, E. E. Swanson, % Eli Lilly and Co., Indianapolis, Ind.; C. J. Zufall, Lafayette, Ind.; James C. Munch, % Sharp & Dohme, Glenolden, Pa.; W. J. Husa, U. of Fla., Gainesville, Fla.; Heber W. Youngken, % Mass. College of Pharmacy, Boston, Mass.

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(Continued on page xii)

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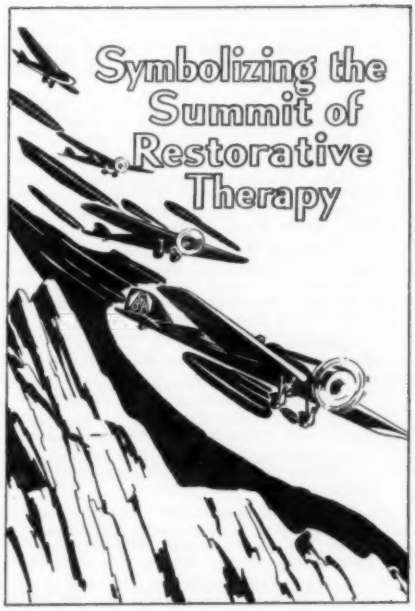
(Continued on page xiv)



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(Continued on page xv)

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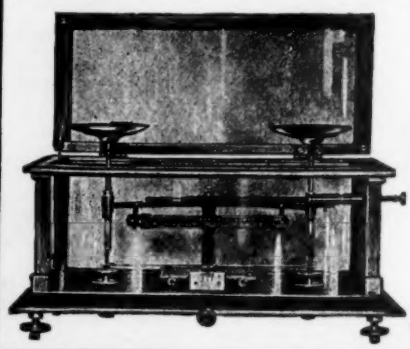

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Boards of Pharmacy Roster....xvii, xviii
Conferences....xviii
State and National Associations Roster....xix, xx, xxi
Officers of the Local Branches, A. PH. A....xvi

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McGraw-Hill Book Co., Inc....—
National Formulary V..3rd Cover
Pharmaceutical Recipe Book....3rd Cover
Fighting Disease with Drugs...vi
YEAR BOOKS, A. PH. A....xiii

Bottles
Kimble Glass Company....vii
Owens-Illinois Glass Company..—
Swindell Brothers....xxii

Chemicals
Ciba Company....xiii
Hoffmann-La Roche, Inc....v
Mallinckrodt Chemical Works...vi
Merck & Co....ix
Schering & Glatz, Inc....—
E. R. Squibb & Sons....—
Winthrop Chemical Co....—

Colleges and Schools of Pharmacy
Detroit....xv
George Washington Univ....xv
Massachusetts....xi
North Pacific....xi
Philadelphia....xv
Pittsburgh....xi
St. Louis....xi
University of Illinois....xi
University of Maryland....xi

Corks
Armstrong Cork Company....—

Drugs
J. L. Hopkins & Co....iii
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Fire Insurance
American Druggists' Fire Insurance Co....viii

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Mellin's Food Company....ii

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Gopher State Caviary....—

Pharmaceuticals
Armour & Company....—
Ciba Company....xiii
Fairchild Bros. & Foster..2nd Cover
Hoffmann-La Roche, Inc....v
Hynson, Westcott & Dunning, Inc....iii
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Parke, Davis & Co...Back Cover
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Henry Troemner....xxii
Torsion Balance Co....ii

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Full-page advertisements in leading medical journals are being used. "Therapeutic Notes," our own publication that reaches the entire medical profession, is telling the Haliver Oil story in detail each month. Messages on the subject are going to doctors in every city and hamlet in the country. Our large staff of Medical Service men are daily interviewing hundreds of physicians. Thousands of packages for clinical trial are being mailed to doctors who have requested them.

This broad plan of promotion is at its peak right now, and one of the main objects of it all is to send prescriptions for Parke-Davis Haliver Oil products to drug stores everywhere.

Such, in brief, are the highlights of one of the largest and most comprehensive promotion plans ever undertaken in behalf of a group of medical preparations. Any member of our Sales or Medical Service Staffs will tell you about the plan, will tell you how to link it up with your store. Do not let "out-of-stock" lose sales for you. Keep plenty on hand, in all sizes: Haliver Oil with Viosterol-250D, in 5cc. and 50cc. vials and in boxes of 25 and 100 three-minim capsules; Haliver Oil Plain, in 10cc. vials and boxes of 50 three-minim capsules.

PARKE-DAVIS HALIVER OIL PLAIN

PARKE-DAVIS
HALIVER OIL
PLAIN
EACH 3 MINIM CAPSULE CONTAINS APPROXIMATELY 8500 UNITS OF VITAMIN A ACTIVITY AND 340 A. D. M. A. UNITS (34 STEENBOCK UNITS) OF VITAMIN D ACTIVITY.
PARKE, DAVIS & CO.
50 CC.
PARKE-DAVIS
HALIVER OIL